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Volume 90 Number 21

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

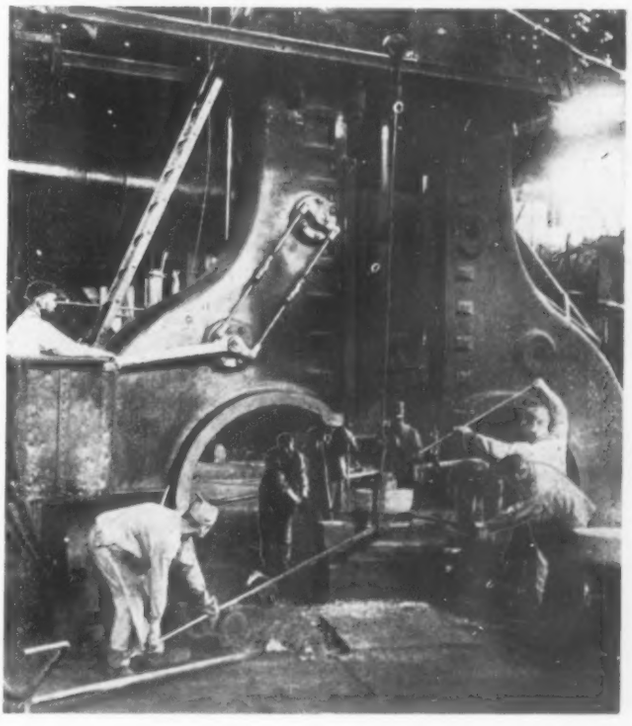
A THOROUGHLY disillusioned but militant steel industry was represented at New York, May 19, when Charles M. Schwab convened the spring meeting of the American Iron and Steel institute (p. 13). Realists all, even including Mr. Schwab, there was some progress to report since the fall meeting: The process of disintegration has been slackened. No longer is steel a beleaguered industry; it has retrenched short of jettisoning the "know how"; it is now reforming its ranks for an offensive. But vigorous and constructive as steel and other industries may be in setting their houses in order, the cement to bond these efforts must be supplied by Washington. Only Washington can fend foreign dumping, balance the national budget, impose rational taxes, assure timid credit. But while awaiting reinforcements from Washington, steel will not drift. The Institute is constituting itself a forthright spokesman for the industry, is combating tariff injustices, will shortly give effect to an invigorated policy.

Sherman Law a Boomerang Now

Such enlargement of the orbit of the Iron and Steel institute is a gesture toward the ideal set up by the president of an important sheet interest in addressing a group of advertisers (p. 15). Intelligent, effective co-operation, trade extension activity, planned marketing, a consolidation of minds instead of properties—these, he avers, would give business a helping hand out of the pit if antitrust laws did not forbid. An understanding revision of these laws is the remedy prescribed. . . . A consolidation of orders instead of minds or properties—pooling of bookings in one plant in one district for more economical production—is the co-operation discussed but not adopted at the Steel Founders' convention (p. 15). Steel foundry capacity, incidentally, has shrunk 2½ per cent; the industry is bearish on the immediate business outlook but is girded for the long pull.

Warehouse Buyers Not Monagamists

Another sort of co-operation in the week's news is that of iron and steel warehouse customers, who have revealed their buying habits to permit jobbers to improve and enlarge their service (p. 18). Seventy per cent patronize three or more sources of supply; 61 per cent put a definite value on metallurgical service from mills; on some products the production manager is the key to sales. . . . Warehouses



—*Keystone Photo*

Why unemployment is least severe in France: Eight workmen around one hammer. A scene for an artist but not for an efficiency expert

Easily mistaken for a robot, this welder in Schenectady works of the General Electric Co.

at Detroit (p. 51) are adjusting their cold-finished steel prices to the new mill base and are adopting quantity extras.

Inbuilt Safety Is Independent of Men

Intermittent as steelmaking operations have been in the past year and despite the stagger plan to distribute employment as broadly as possible, the steel industry continues to be a safe one. Comparing the record of the industry in 1931 with 1930, the accident frequency rate shows an improvement of 12 per cent, the severity rate 13 per cent (p. 17). Apparently safety is an inbuilt factor and mechanical devices overshadow the human element. For their unusual showing in 1931, the National Safety council cites the Corrigan, McKinney Steel Co., South Chicago works of the Youngstown Sheet & Tube Co., and the Pittsburgh Steel Co.

Steel the Base of All Industry

Not only is steel safe for its employes but it also is beneficient in the sense that it contributes generously to humanity's well-being and exerts a large potential influence as a source of demand and supply in sustaining other industries (p. 29). Based on 1929 statistics, steel accounts for 10 per cent of all industrial employes, pays 10 per cent of all wages. . . . As a promoter of research steel also ranks high. On the program of the annual meeting of the American Society for Testing Materials (p. 33) is a roundtable session on the acquisition of useful data.

Welding Code in State of Flux

Looking ahead, an authority on welding foresees a number of modifications in the A. S. M. E. code for fusion welding (p. 31). Confining Class 1 welding to power boiler drums, inclusion in Class 2 of all unfired pressure vessels that are to be fusion welded, probable elimination of Class 3 welding—such is the forecast. X-ray tests on all welds in power boiler drums is suggested. . . . Commercial application of X-ray tests on a large scale is possible by means of equipment recently installed in an eastern shipbuilding plant (p. 32). A co-ordinated system of supporting and rotating vessels to be examined and of supporting and shifting the X-ray tube provides unusual convenience and flexibility.

Examination Difficult as Production

In such nondestructive examination of metals radiographic methods are increasingly prominent (p. 29). Two methods—the well-known X-ray and the newer gamma ray—are used. . . . But for a study of the behavior of rolling mill drives when subjected to violent load changes, not rays but the stethoscope, co-ordinated with photography (p. 39), is proving its worth. . . . A case of behavior more difficult to fathom is the sensitivity of steel, or its characteristic degree of reaction to conditions of thermal treatment, cold work or natural aging (p. 28). This sensitivity is profoundly affected by metallic alloying elements, and were it possible to gain complete control of this behavior, the nature of an alloy steel would become simpler.

Price of Chromium Handicaps Stainless

Continued gains in the use of the 18-8 type of stainless steel appear assured (p. 27), but price may remain a handicap because of the short supply of chromium. . . . One path to more economical use of this steel (p. 36) may lie in a method of wrapping it around carbon steel. . . . An economy in the production of carbon steels has been effected by one Middle West plant (p. 30) by underfiring two of its three batteries of coke ovens with blast furnace gas, thereby releasing coke oven gas for other metallurgical heating operations. . . . Going back to the ore, savings in production of steel are being offset (p. 30) by excessive taxation of mining properties.

Institute To Help Speed Recovery; Elevate Grace, Irvin

WHEN directors of the American Iron and Steel institute next meet, about June 15, they will formulate a definite program for broadening the activities of the Institute—a constructive move first broached by Charles M. Schwab, president, in opening the spring meeting of the Institute at New York, May 19.

Of this wide scope, the vigorous pursuit of foreign dumping of iron and steel is an early indication. A "program of constructive work for the benefit of the industry" is the promise of Mr. Schwab, presumably enabling the iron and steel industry to present a more united front in combating forces and factors retarding the recovery of business.

Washington Must Assist

Declaring that at no time has the steel industry been confronted with a more grave situation, Mr. Schwab nevertheless posited his usual optimism upon the drastic housecleaning which the industry has undergone, but emphasized that Washington through constructive, forward-looking legislation must assist.

In presenting William A. Irvin, new president of the United States Steel Corp. and now also an active vice president of the Institute, Mr. Schwab described his as a "friend of long standing of stalwart character and great credit to the industry."

Of James A. Farrell, who recently retired from the presidency of the Steel corporation, Mr. Schwab said: "He is taking a well-deserved rest of his own volition and desire. He was a valued and indefatigable worker in the affairs of the Institute and the industry."

Mr. Farrell, who is now on the Pacific coast and is scheduled to return to New York June 5, was elected an honorary vice president of the Institute, taking rank with Thomas Cantley, Willis L. King, and John A. Topping.

Mr. Irvin observed that "no man can say when the tide will turn, but I have not lost hope or faith for the future. When proper credit conditions are restored, we will have everybody working to the satisfaction of all."

Thereby Mr. Irvin epitomized the general sentiment of steel leaders attending the institute meeting. There were no predictions of immediate recovery, few complaints of the present situation, an underlying confidence that slowly but surely the industry and the country will work back. Expressions were sober but not disspirited.

At the banquet, attended by about 800, Julian Kennedy, noted Pittsburgh engineer, was awarded the Gary medal "for outstanding achievement in chemical and metallurgical advancement in iron and steel."

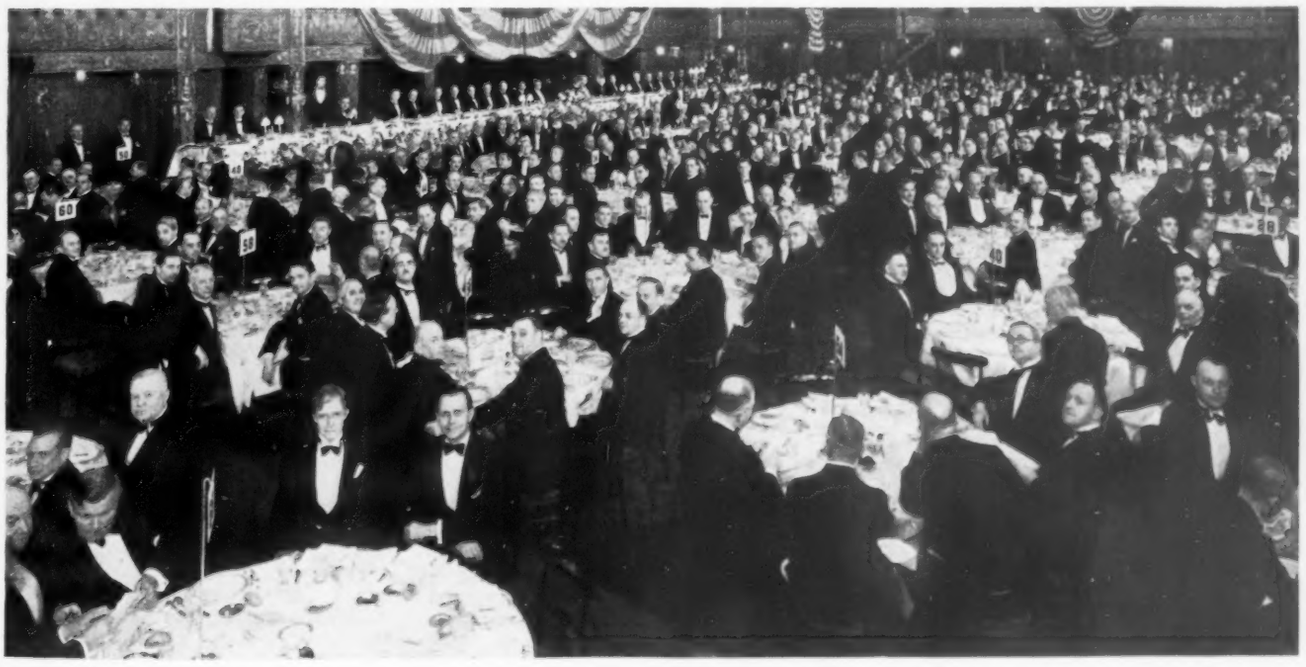
A doleful picture of early relief, through governmental economy, was painted by James M. Beck, Philadelphia, representative, who believes that when congress adjourns federal expenditures will be greater than ever. Mounting extravagances and inability of the administration to cope with them he attributed to development of the bloc system and a breaking down of party lines.

Theoretically, he declared, heavy economies in governmental expenditures could easily be made if certain activities, not conceived in the letter of the constitution, were suspended.

Power to Tax Is Weak Spot

"While the constitution is as strong as Achilles it has a vulnerable heel, which is the power of congress to tax and appropriate at will," said Representative Beck. "The biggest blunder in American political history occurred 145 years ago when all states were given equality in the senate. * * * The national budget will never be balanced until there is a return to the limited form of government as originally conceived by framers of the constitution."

In humorous vein, Gus W. Dyer, professor of economics, Vanderbilt university, Nashville, Tenn., declared the trend of industry was away from large centers and toward rural districts. Here, he maintained, wages can be governed by natural laws. He believed the theory that high wages



GATHERING OF THE STEEL CLAN: Approximately 800 attended the banquet closing the forty-first general meeting of the American Iron and Steel institute the evening of May 19, a reduction from previous attendance but "balancing the budget," as President Schwab put it

be paid to workmen that they might have more to spend has been disproved.

E. G. Grace, president of the Bethlehem Steel Corp., was made an active vice president of the institute, taking rank with James A. Campbell.

Courage, Faith— And Tonnage

By Charles M. Schwab

(Before the Institute)

AT NO time in our past have we faced more difficult situations than we must meet at present, yet I wish to assure you at the outset that your directors look to the future with faith and courage. These are not empty words.

Specifically, I am pleased to report that the directors of your Institute have determined to broaden the scope of this body. The Institute has done good work in the past, but in times when we have so many problems in common, it is important to have a more invigorated policy, to extend our facilities for presenting a unified front for our industry.

We have added to personnel, added to departments and begun to organize programs of constructive work of the benefit of the industry. There you have an indication of the faith of our steel executives in the growth of our business in the years to come. It also illustrates a co-operative spirit, the like of which I have not seen in this industry in the past.

Figures Tell the Story

We must keep this faith and spirit active while we face and deal with some of the stern realities of the present situation. We need only to consult the quarterly reports of our companies for the beginning of this year to realize the imperative nature of our predicament.

The five leading companies in our industry for the first quarter of this year failed to earn their interest, depreciation and other charges by $25,000,000, which is equal to approximately $12.50 per gross ton of finished steel produced.

Our production status is equally appalling. We appear to have stopped declining, but we are going along at a level of between 20 per cent and 25 per cent of capacity, which indicates, unless there is an improvement, a 1932 output of only 16,000,000 to 17,000,000 tons, the lowest since 1908.

I submit that for the nation's basic industry to be in this condition is not for the best interests of our country, our customers or our workingmen. We have a responsibility to ourselves in remedying this situation as best we can, and it is equally a responsibility which affects the total economic welfare.

The condition of our industry is governed by the three factors of costs, price and volume. When these are in proper balance, you have a profitable and constructive business. Costs must always be brought into line with the inexorable limits of income. Prices must reflect a proper return to industry for its labor, materials and investment. Greater volume is imperative if our industry is to be kept alive at anything approaching its present size

I am not discouraged as to our ultimate emergence from this depression, but I affirm that we are taking and must take heroic measures to balance our budgets, not only with respect to our companies but likewise in public affairs.

We and the rest of the world are the victims of a lopsided deflation. If at one stroke it had been feasible to deflate prices, security values, realty, wages, taxes, earnings, debts and credits, all to the same degree and all at one time, the disturbance would have been relatively negligible, because the inter-relationship of all the factors would have remained the same.

Julian Kennedy
Awarded Gary Medal of American Iron and Steel Institute

In actual practice a uniform deflation never occurs, because some costs occupy a protected position, while other items yield more easily to economic upsets. For example, today certain raw materials prices are much overdeflated and must be increased.

On the other hand, the cost of government is much too high and must be brought into line. The revival of our industry depends not only upon balancing the budget in our own industry, but also on the re-establishment of equilibrium in the total economy of commerce. * * *

Some observers of the steel industry have criticised us because we have not sunk to the extreme low price levels of some commodities. As a matter of fact, I know of no higher compliment and I even wish we were more deserving of it.

The most destructive thing in our total economic picture has been the unwarranted deflation of commodity prices caused by contraction of credit and the panicky policy of some producers to offer their materials at far less than the cost of prodution.

When we see some commodities reduced in value by 75 per cent, and brought to a point where they spell ruin to the producer and to employment, we should take heed and see to it that the steel industry does not follow along that path.

Balancing your budget does not mean cutting the heart out of everything. It means establishing a proper relationship between items of cost and items of income. Distress prices must be leveled up, not sunk lower

In the steel industry we have had a continuous price decline since the early 1920's, until our prices at the mill are now back to 1913 levels. Freight rates since then have doubled. Wage rates, in spite of recent cuts, are twice as high, and fixed charges have been steadily mounting.

Yet, to take one example, plates which in 1913 sold at the mill for $32 per ton still bring but $32 today. That is where we have been brought by reckless, suicidal competition, and anyone who thinks the prices are high enough need only look at our quarterly statements.

Foreign Dumping a Menace

I am happy to say that at the present time there is a greater sanity and wider appreciation of the need to remedy this condition in our industry than for many years past

The situation, however, is not wholly within our control. Our markets today are being upset by the dumping of foreign steel at sacrifice prices on American shores. The volume, to be sure, is a small proportion of our business, but the activities of the marginal producer inevitably affect the total structure.

This is a case where we must look to Washington for aid. The foreign producer who is getting only $10 or $12 per ton for his product is selling for less than he receives for his product at home, and is, therefore, within the dumping act. Or else he has reduced his cost of production at the expense of a standard of living which we have always felt it necessary and desirable to maintain in this country.

If our legislators are willing to see our wages driven down and kept down to the level of the poorest European populations in order to meet the lowered costs of foreign production, that is a responsibility which they should not assume without grave thought.

There are indications that the responsible authorities are becoming alive to the situation; and I am hopeful that some real relief may be forthcoming on this score.

While we are endeavoring to improve the economic status, we cannot escape the dictates of present conditions. In fact, our willingness to meet the necessities of the situation is the basis for our industry's credit and our financial integrity.

We have been forced to deflate labor, deflate employment and deflate dividends in order to survive. The recent cut in wage rates was compelled by existing conditions.

The declining resources of our re-

spective corporations made it imperative for us to deflate our labor costs in line with corporate income, in order that there might continue to be any wages and any employment at all. Had this not been done now, we would face the prospect of a financial distress which would involve considerably more sacrifice for both wage earners and salaried employes than they have yet suffered. * * *

Fair wages consistent with its income is the policy of our industry. One of the tasks in the broadened scope of our Institute will be to continue to study and adopt those policies which will conduce to the improved condition of our employes. There are many plans and projects which have been recommended on all sides as a result of this extended depression, and they are entitled to earnest consideration. * * *

It is most important for us to keep a level head on this whole question of employment and personnel. We must not be stampeded into unwarranted sacrifice of skilled, loyal employes, technical men and executives who are, in the last analysis, the dynamos who keep our mills running.

It is the "know-how" in business which makes for the ultimate success or failure, and our companies have invested years of training and experience in their man-power It takes years to build an organization, and in all our programs of retrenchment we must be watchful lest we destroy this valuable investment in personnel.

In any labor policy the human considerations are basic. Industry was made for man, not man for industry.

Credit Must Aid Recovery

Looking at our present-day balance sheet, let us see where we stand. Frankly, gentlemen, until the volume of our business is restored, the best that we have done has been to slacken the process of disintegration. Even with firmer prices and these drastic cuts in our costs, we cannot continue indefinitely, unless credit is put to work and the volume of our business is thereby increased.

We have done our part. We have put our house in order. The federal reserve is doing its part. But above all, the federal government which is the heart of our national structure must balance its budget and restore confidence there. From there, confidence, which is the life-blood of trade, will be transfused into our retailers of finance.—the banks,—to re-establish that faith which is so necessary to the flow of credit. God speed the day!

You see, I am still an optimist, even amid present conditions. I continue to have hope and belief in our future, because I have lived so long and have seen our people work their way out of so many trying situations. In this country we have great resources and a great heritage.

We are all of pioneer blood, whether recently or generations back. The pioneer spirit is daring, devout and industrious. Such a combination cannot permanently be downed. Not fearing the future, ready to face every issue, and determined to fight for what we believe, we are on the path toward equilibrium.

Steel Founders Talk Pooling; Industry's Capacity Reduced

POOLING of steel castings business in the more important producing districts was discussed at a meeting of the Steel Founders' Society of America Inc., at New York, May 18, but no decision was reached.

Steel casting manufacturers at Milwaukee, for instance, have been discussing the feasibility of concentrating their orders in one plant and keeping that running at a satisfactory rate.

Those opposed believe that, from their own standpoints, it is best to keep their plants running at as favorable a rate as possible under present conditions in order to be in shape to get their share of business when demand revives.

Further Decline Is Forecast

A further reduction in demand for steel castings over the next few weeks was forecast by a majority of members, now operating at rates from 50 per cent down to almost nothing. Although repairs cost almost as much as new parts, it was pointed out that railroads are unable to get appropriations for new material, whereas occasional funds for repairs are made available.

Concerning the ultimate recovery of the steel castings market there was no doubt, inasmuch as products are wearing out much more rapidly than replacements are being made.

Analyzing the position of the industry, Granville P. Rogers, managing director of the society, stated that from 1930 to 1931 the available capacity for producing steel castings by all the principal melting processes decreased 66,000 tons or 2½ per cent. A slight gain in open-hearth capacity was recorded, more than offset by declines in converter and electric capacity.

Economy Lessons Are Taught

Output of steel castings in the United States in 1931 declined 542,000 tons from 1930, or 48 per cent. Open-hearth tonnage went off 50 per cent, electric 42, and converter and crucible each 41.

George R. Casey, vice president, Treadwell Engineering Co., Easton, Pa., credited the depression with teaching lessons in economy which should react beneficially to the steel founders industry when satisfactory business returns Arthur Simonson, president of the society and vice president of the Falk Corp., Milwaukee, advocated an abandonment of the defeatist attitude and recommended "fresh cultivation of the spirit which made this country what it is."

Clarence Tolan Jr., Dodge Steel Co., Philadelphia, condemned constructive buying methods pursued by some consumers. Clarence B. Bartlett, industrial analyst, Milwaukee, discussed silicosis and means of minimizing it.

To Make 5 Miles of Trim

New York—United Metal Products Co., Canton, O., will fabricate close to 5 miles of chromium-nickel strip and sheets, No. 18 gage, 6½ to 7 inches wide, for exterior trim for the Insurance Co. of North America building, here.

Comeback Retarded By Obsolete Laws

SPEAKING at the midannual convention of the Association of National Advertisers at Cincinnati on May 21, Charles R. Hook, president, American Rolling Mill Co., Middletown, O., urged modification of government restrictions on business as an aid in restoring profitable marketing. He said in part:

Our obsolete trust-busting legislation for the protection of the consumer against monopolies has been largely responsible for the long stay of adverse business conditions. It is no longer "protection for the consumer," but "the survival of the fittest."

Strangely enough antitrust legislation permits buyers to form agreements relating to the price they will pay, but expressly denies manufacturers the same prerogative. When the output of an industry is consumed by a limited group of large consumers, this has the effect of destroying the equilibrium of the law of supply and demand.

No one today would be willing to condone a monopoly of any sort, but I believe the public is not opposed to consolidations which ultimately will serve to stabilize employment and reduce the costs of manufacturing and distribution, which the consumer must ultimately pay. By "consolidation" I do not necessarily mean the merging of facilities and organizations, but a merger of effort within each branch of industry for intelligent, effective co-operation.

Each industry could maintain a central bureau, officered by representatives of the different companies, and government could also have representation in the official business family. Statistical information, trade extension services, and certain other activities might be centralized and the reserve system, the administration cost of these functions considerably

reduced to each unit through the elimination of duplication. Production could be kept more nearly in pace with consumption and prevent the accumulation of excess stocks which so frequently lead to maladjustments.

Somehow this retarding influence of government restriction must be removed from our national horizon. That is government's part, but the people must make it clear that they want it done. Government cannot pull business out of the pit; business must climb out under its own power. I am of the opinion that in spite of all obstacles it will climb out. It is evident, however, that it would begin to climb out much sooner and get out much faster if these obstacles to planned and profitable marketing were removed.

Texas Jobbers To Meet

Texas Hardware Jobbers' association will hold its annual convention at Galveston, Tex., June 3-4, with headquarters at the Hotel Galvez.

The Business Week In Washington

AMERICAN Iron and Steel institute, which has been active in advocating the Hawley bill, to adjust the tariff in conformity with fluctuations in foreign currencies, and has proposed several investigations based on alleged dumping, will shortly file dumping complaints in connection with bars, shapes and other iron and steel products. A specific complaint on alleged dumping of iron and steel hoops is already before the customs service of the treasury department.

□ □ □

While regarding as constructive the formation of a committee of 12 business and financial leaders in New York to convert into credits funds "pumped" into banks by the federal reserve system, the administration still appraises an early adjournment of congress as the most helpful immediate factor for a revival of business.

Some hopes are entertained that a jam in the senate on the revenue bill might revive the sales tax, but the general opinion is that the bill reported out by the senate finance committee is likely to be the pattern. Efforts to adopt wartime income surtaxes have been beaten, and the 3-6-9 per cent normal tax basis retained.

□ □ □

A resolution adopted by the house calls upon the secretary of the treasury to submit all records and evidence pertaining to the dumping investigation on ammonium sulphate. It is understood that the treasury was about to issue a ruling on this case, but it will now be withhheld until the intent of the house is ascertained.

□ □ □

Enough acceptances have been received by the department of commerce to the commercial standard for diamond core drill fittings to make the standard effective Aug. 15.

□ □ □

Interstate commerce commission has discontinued its investigation into rates on cast pipe in the South.

□ □ □

Representative Sabath, of Illinois, has introduced a resolution calling for a special house committee to look into price-fixing legislation.

Referee Sees No Fraud in Bethlehem-Sheet & Tube Merger; Upholds Dalton

OPPONENTS of the proposed merger of the Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. were furthering an "unmeritorious" case after more than two-thirds of Sheet & Tube's voting power was cast favorably for the merger, declared John T. Scott, Cleveland attorney, as referee for the Mahoning county court of appeals, Youngstown, O., in denying the claim of antimerger attorneys for fees estimated from $700,000 up.

In his opinion Mr. Scott takes an opposite stand on practically all points raised by Judge David Jenkins in issuing the injunction in 1930 which ultimately led to abandonment of the attempt to merge. Primarily, the Scott opinion deals with the merits of the antimerger attorneys' contention for fees, but in reviewing the case a clean bill of health is given to H. G. Dalton, senior partner of Pickands, Mather & Co., chairman of Sheet & Tube and a director of that company and also of Bethlehem during the merger period. The opinion states in part:

The particular fact that Mr. Dalton participated in negotiating the contract does not condemn it. It is well settled that a contract between a director and his company is valid if open and free from fraud.

It is inconceivable that such a contract could be made without the contracting director participating in the negotiations; and yet such contracts, if open and free from fraud, cannot be set aside.

Manifestly, therefore, the mere fact, in and of itself, that Mr. Dalton, a common director of both Youngstown and Bethlehem, participated in negotiating the contract, does not invalidate the contract.* * *

It is urged that 60,000 (approximately) shares owned by Pickands, Mather & Co. were illegally counted in favor of the resolutions authorizing the contract, because, it is said, Bethlehem loaned Pickands, Mather & Co. about $800,000 for a few days, and the proceeds of this loan were used by Pickands, Mather & Co. in acquiring Youngstown shares which were voted among the approximately 60,000 shares aforesaid. The contention is asserted to be based on the grounds of "public policy." The referee sees no question of public policy involved at all; and no authority is cited to show that there is.* * *

There was no fraud or oppression in the transaction here involved. Stripped of its draperies of acrimony and bitterness, the record shows nothing more than a controversy, on a business matter, between two factions of stockholders. Each faction was headed by men of high personal repute, familiar with the steel industry and its problems, and of large experience in general business affairs.

The count of the vote showed that more than two-thirds of Youngstown voting power had voted in favor of the resolutions authorizing the contract. That vote is conclusive here and everywhere. It disposed of the controversy finally and forever. Whether the judgment of the shareholders was good or bad, the course cannot disturb it. Accordingly, it must be held that the plaintiffs' suits were unmeritorious.

Reorganize Witherbee

New York—Reorganization of Witherbee, Sherman & Co., operating a blast furnace at Port Henry, N. Y., and iron ore mines in the vicinity, will be effected by formation of a new company and an affiliated sales corporation to take over operations of the old company, if a plan proposed by the reorganization committee is adopted. The company's indebtedness would be reduced by $3,000,000, lowering fixed charges $340,000 annually, and an increase in net working capital would be obtained by the release of certain assets now pledged on bank loans.

Standardize Refractories

Washington—A simplified practice recommendation covering supola refractories is being circularized following a meeting at Detroit, May 3. Standards are set up for sizes and varieties of cupola lining, one and two hold tapout, and slag hole blocks.

Approve Swope Plan

National Electrical Manufacturers association, holding its spring meeting at Hot Springs, Va., May 16, approved the unemployment plan proposed Sept.

16, 1931, by Gerard Swope, president, General Electric Co., Schenectady, N. Y. Under the Swope plan, regularity and continuity of employment would be assured by stabilization of industry with unemployment insurance as a reservoir of safety.

Financial News of Steel Industry

ALLEGHENY STEEL CO., Brackenridge, Pa., has declared a regular quarterly dividend of 1¾ per cent on the preferred payable June 1 to record May 14.

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Spang, Chalfant & Co. Inc., Pittsburgh, has deferred action on the preferred dividend due at this time. The stock was on a $6 annual basis and is cumulative.

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Dominion Steel & Coal Corp. Ltd. associated companies, Montreal, Que., reports net loss of $572,179 for 1931. This compares with 1930 net profit of $858,433, excluding $194,751 realized from the recovery of insurance claims and old accounts previously written off. Current assets as of Dec. 31, 1931, were $8,449,500 and current liabilities were $1,517,400.

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A. O. Smith Corp., Milwaukee, automotive frames, welded pipe and pressure vessels, for the six months ended Jan. 31, 1932, reports a net loss of $2,872,827, after depreciation, interest and other charges. This compares with net profit of $2,866,621 after federal taxes, equal after dividend requirements on the 7 per cent preferred, to $5.64 a share on 500,000 shares of common for the six months ended Jan. 31, 1931.

Dominion Output Is Off

Toronto, Ont.—Sir Newton Moore president, Dominion Steel & Coal Co., states the company's output of pig iron in 1931 was 101,382 tons, compared with 212,365 tons in 1930; steel ingots, 168,952 tons in 1931 and 295,080 tons in 1930; finished steel, 144,640 tons in 1931 and 217,284 tons in 1930.

Scrap Code Is Approved

Washington—Federal trade commission has reconsidered the iron and steel scrap industry's trade practice conference rules and is repromulgating them. Four rules pertaining to unfair methods of competition hit "plating," defamation of competitors, malicious inducing of breach of contract between competitors, and bribery.

New Steel Safety Records Despite Scrambled Operations

FEARS expressed by safety engineers a year ago that irregular and unsettled industrial employment would lead to higher accident rates have not been fulfilled in the steel industry.

The National Safety council's current report on its survey in the steel industry in 1931 is chiefly interesting for the proof it affords that the rotation of jobs and in some instances the assignment of men to work with which they were not entirely familiar were not the prolific cause of accidents that they were supposed to be.

The industry evidently has made so much progress in safety engineering, both in the development of mechanical protective devices and in the training of its employes, that it could operate as safely, intermittently, as on regular time.

Improvement in the accident frequency rate over 1930 amounted to 12 per cent; in the severity rate, to 13 per cent. The injury rate is the number of lost-time injuries per 1,000,000 man-hours of exposure. The severity rate is the number of days lost as the result of lost-time injuries, per 1000 men-hours of exposure. The latter rate includes arbitrary charges for permanent disabilities and deaths, in accordance with the standard scale. The following shows the frequency and severity rates for 100 units reporting in the past three years:

Frequency Rates

Severity Rates

"The reduction in the frequency and severity of serious injuries during the last two years is one of the outstanding accomplishments of the industry," says the Safety council. "The frequency of fatalities has dropped from 0.27 in 1929 to 0.21 for 1931, and the frequency and severity of permanent partial disabilities have decreased about 26 per cent. Few industries can point to reductions in all types of injuries over a two-year period."

This showing is said to be due in an important extent to the results obtained by the largest plants in the industry. Forty such organizations employing over 1000 men each reduced frequency 36 per cent and severity 20 per cent from 1929 to 1931. With the exception of plants employing 500 to 749 men, the largest organizations are the only ones to show steady improvement.

The good results were achieved in the face of a sharp curtailment in operations. The number of man-hours worked in identical establishments in 1929 was 535,000,000, compared with 270,700,000 in 1931.

"Corrigan, McKinney Steel Co., Cleveland, with a frequency rate of 1.75 and a severity rate of 0.06 had the best record among the large organizations," says the council. "Credit for the best record among medium size organizations goes to the South Chicago plant of Youngstown Sheet & Tube Co., which operated throughout 1931 with only one temporary disability resulting in the loss of 12 days. Among smaller plants, the seamless tube unit of the Pittsburgh Steel Co., Monessen, Pa., made the outstanding record by working 523,000 man-hours during the year without a single lost-time injury."

Further Expansion Is Seen For Corrigan, McKinney

Cleveland — Corrigan, McKinney Steel Co. is understood to be considering acquisition of the Union rolling mill of the Bourne-Fuller Co., Cleveland, now a division of Republic Steel Corp. On the 21-inch mill can be rolled beams and channels up to 12 inches, angles up to 6 x 6 inches, rounds up to 6 inches in diameter. It is not known that negotiations have reached a definite stage, but this capacity would round out the Corrigan-McKinney finishing capacity.

It is officially confirmed that the Corrigan-McKinney company is negotiating for the Monroe, Mich., mill of the Newton Steel Co. Disposition of the Newton Falls, O., mill of the Newton company may prove an obstacle.

Universal Books Sheets

Washington—Navy department has awarded 3700 pounds of annealed chromium-nickel sheets, 18 x 96 inches, mostly 0.065-inch thick, to Universal Steel Co., Bridgeville, Pa., for $1297, delivered.

Warehouses X-Ray Position; Guy P. Bible New President

A SURVEY of the jobbing field made for the American Steel Warehouse association and presented at its annual convention in New York, May 17-18, discloses:

Out of several hundred consumers quizzed, 47 per cent admit placing orders for 1000 pounds or less with mills, 76 per cent buying 2000 pounds or less from mills.

For this mill purchasing, 40 per cent place a value on a mill connection, 30 per cent cite metallurgical service as an inducement, 25 per cent regard mills more dependable on special specifications, all admit buying largely because of lower price.

Stainless steel is the only iron and steel item replacing other materials to a noteworthy extent. Nonferrous materials continue to make inroads.

On cold-finished steel, the production manager is first to be sold in 33 per cent of the cases, plant engineer in 25, purchasing agent in 25, executive manager in 17.

Seventy per cent of warehouse buyers purchase from three or more jobbers, 30 per cent from two or less. In the latter case, 66 per cent deal with only one source of supply.

Of consumers canvassed, 61 per cent have received metallurgical assistance from mills, 5 per cent from warehouses. Twelve per cent claimed little or no need for this service.

Survey Shows Low Turnover

This survey by the Harry K. Dun organization, New York, was presented by William E. Cain. Its discussion, leading to managerial and merchandising problems, overshadowed such topics as taxation, tariff and other national issues.

A survey of 23 members of the association revealed that 19 showed a loss in 1931, the average loss being $7.33 on every $100 worth of merchandise sold. The four reporting a profit made an average of $6.83 on every $100. A turnover of 2.46 was the lowest in recent years.

Two distinct schools of thought were developed during a discussion of adjusting salesmen's compensation. One favored a strict realignment of outgo to income; another believed salesmen should be retained, as present conditions were certain to be relieved and sales effort is the more necessary now.

Practically all interests represented at the convention reported making at least two wage and salary reductions, and some three, usually 10 per cent in each instance. The tendency toward a 5-day week is pronounced.

The cold-rolled strip steel committee recommended that a shearing charge be made in all cases except on widths 12 to 12½ inches, thereby eliminating the necessity of a great variety of widths to meet competition—either that, or go to the other extreme, and one believed to be the simpler, and eliminate all shearing charges by changing the quantity extras and base prices sufficiently to absorb shearing, thereby placing, it was said, all jobbers on an equally competitive basis at all times.

Quantity Extras Involved

According to A. B. Meade, Peter A. Frasse & Co. Inc., Philadelphia, chairman of the committee, such a plan might involve quantity extras as follows: 2000 pounds and over, base; 1000 to 1999 pounds, 0.75c; 500 to 999 pounds, 1.50c; 300 to 499 pounds, 2.50c; 200 to 299 pounds, 4c; and less than 200 pounds, 6c.

This also might involve raising the base price approximately 80c (starting with a base price somewhat lower than the one now used so that recent mill reductions that have not been reflected may be) on size 0.032 inches and heavier, and an additional 50c on thicknesses under 0.032 inches.

The committee believed such a plan would not only greatly simplify the existing pricing method but also eliminate entirely the loss of orders due to errors in figuring. The quantity extra and base price advances, as suggested, were entirely arbitrary and open to discussion and change, but the committee believed that many considerations might well be sacrificed in the interest of the simplicity which it was sure the plan would accomplish.

While stressing importance of a greater interest in national affairs, W. J. Holliday, of W. J. Holliday & Co., Indianapolis, retiring president of the association, declared members still had much to do in setting their own houses in order. Most have been forced to eliminate a percentage of employes and to reduce wages. In many cases this has not been enough to allow operations at a profit.

Hence, he said, further action must be taken in such matters as the elimination of competitive delivery schedules, reduction in the use of collect long distance calls, uniform classification of compensation insurance in the reduction in the number of stock lists annually, which, he said, have all saddled an unnecessary expense upon the warehouse industry.

Guy P. Bible, of Horace Potts & Co., Philadelphia, who was named president to succeed Mr. Holliday, predicted that jobbers will shortly receive better and justified recognition of their services to the steel industry and will also receive greater co-operation from mills. For a solution of the small mill order the times never were more propitious, he declared.

Reporting for the sheet steel group, Chapin E. Harris, Brown-Wales Co., Boston, commented on the low volume of trade in recent months, but ventured the opinion demand for sheets was slightly improved. The committee believed it unwise to recommend any action on the prevailing discount rate at this time, but emphatically took the view that seconds should be more clearly identified, recommending that mills mark second sheets at ends and center in letters at least 2 inches high.

The committee also recommended application of differentials on small quantities and strongly protested the making up of mixed lots in pool cars, selling ultimately below warehouse differentials. Mill sales of seconds improperly marked drew fire from several members, as did pooled car shipments. It was voted to empower the committee to contact the National Association of Sheet Steel Distributors in an effort to develop the degree by which the two associations may co-operate for mutual good.

Foreign Problem Acute

While each warehouse district has its own local problems, Carroll S. Harvey, Arthur C. Harvey Co., Boston, chairman, plate and structural committee, reported the foreign steel import situation was the most serious quoting $1 per 100 pounds as the price of this material at dock in some instances.

Better credit terms were available for imported steel, foreign producers have increased their quality, and in New England structural and ornamental iron shops are buying imported steel in larger tonnages and its use is spreading to industrial concerns in practically all lines. Some of the best rated and leading jobbers have been driven to the handling of foreign steel to meet price competition, he said. He urged that quan-

(*Please turn to Page* 63)

Industrial Men in the Day's News

Charles N. Stoddard, President and General Manager, Greenfield Tap & Die Co., Greenfield, Mass.

VIRTUALLY his entire business career he has been a lawyer, but he has been a director of the Greenfield company since its inception.

AS president he succeeds Francis G. Echols, who retires after having devoted over 40 years to the small-tool field.

MR. Stoddard is a director in numerous financial and industrial concerns.

CHARLES N. STODDARD has been general counsel and a director of the Greenfield Tap & Die Co., Greenfield, Mass., since its inception. At one time he was its vice president. As noted in STEEL, Feb. 29, he is now the company's president and general manager.

Born at Irving, Mass., July 29, 1877, Mr. Stoddard was the son of Joseph G. Stoddard, who was identified with the Boston & Maine railroad until his recent retirement. He received a public school education at Greenfield and graduated from Williams college with the class of 1900.

During his summer vacations he worked in the law office of Dana Malone, who supervised his law study. In 1903 he was admitted to the Massachusetts bar and from 1905 until 1911, while Mr. Malone was the Massachusetts attorney general, Mr. Stoddard had complete charge of his office in Greenfield, remaining as a partner in that firm until 1917.

Since 1917 he has practiced law under his own name, and later with the two men associated in his law firm's name of Stoddard, Ball & Bartlett.

At the Greenfield Tap company's directors' meeting of Jan. 22, 1932, Mr. Stoddard was elected president and general manager, to succeed Francis G. Echols.

He is a director of the First National Bank of Greenfield; trustee and a member of the board of investment of the Franklin Savings institution of Greenfield; director in Berkshire Fine Spinning Associates Inc., Adams, Mass.; director of W. C. Plunkett & Sons Co., Adams; director, Cotton and Woolen Manufacturers' Mutual Insurance Co.; director of the Rubber Manufacturers' Mutual Insurance Co., and of several other financial and industrial concerns.

Mr. Stoddard is a member of the University club of Boston; Williams club, New York, the Greenfield club, Greenfield, and is also a member of the Masonic fraternity.

E. F. GOHL, formerly manager of the Los Angeles district of the McClintic-Marshall Corp., has been appointed Pacific Coast manager, with offices at Twentieth and Illinois streets, San Francisco, and will have charge of all activities of the Corporation on the Pacific Coast. Mr. Gohl was graduated from Lehigh university in 1907, and has been with the Corporation since.

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Charles J. Gros, identified with the brass foundry industry in Philadelphia for 20 years, has been made sales manager of the Barry Bronze Bearing Co., Camden, N. J. That company, which has been devoted exclusively to development of special bearing alloys, also will produce aluminum brass, bronze, and copper castings.

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John K. Calder, formerly associated with Albert Kahn Inc., Detroit, and since June, 1929, acting in various capacities for the Soviet government on construction projects, has been placed in charge of construction to the Soviet copper plant at Lake Balkhash.

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Charles T. Bird, formerly identi- Bearing Co., Camden, N. J. That

ries, Alliance, O., and Pangborn Corp., Hagerstown, Md., has been made manager of sales, sand blast and dust arrestor division, American Foundry Equipment Co., Mishawaka, Ind.

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James D. Henry, associated with the Ferro Enamel Corp., Cleveland, for many years, is now treasurer. R. A. Weaver is president, H. L. Brooks and H. E. Ebright vice president, R. L. Williams chairman of the board.

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J. E. Perkins, formerly in charge of porcelain enameling for the Ferro

Enamel Corp., Cleveland, has been made superintendent of the porcelain nameling plant of the A-B Stove Co., Battle Creek, Mich.

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Jesse F. Welborn, chairman of the board Colorado Fuel & Iron Co., Denver and Pueblo, Colo., was complimented by the Denver chamber of commerce for the work he is doing as chairman of the Unemployment association.

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Winslow Sampson, for many years associated with S. K. F. industries, has been made Pittsburgh district manager of the Kron Co., manufacturer of industrial scales, Bridgeport, Conn.

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R. H. Smith, manager of the Boston office of the Reliance Electric & Engineering Co., Cleveland, has been promoted to manager of the development engineering department at Cleveland.

C. E. Robinson succeeds Mr. Smith at Boston.

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Lester B. Knight Jr., active in the American Foundrymen's association and author of several technical papers on sand, has been appointed sales manager of the National Engineering Co., 549 West Washington boulevard, Chicago, manufacturer of sand mixers and other sand preparing equipment. H. S. Simpson is president of the company.

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Thomas A. Reynolds, McConway & Torley Co., Pittsburgh, has been elected president of the Pittsburgh Foundrymen's association, Pittsburgh.

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George R. Sullivan, formerly vice president, Rogers Brown & Crocker Bros. Co., has been appointed sales agent in the Philadelphia district at 1242 Commercial Trust building, for the Hanna Furnace Corp. division of National Steel Corp. The sales offices at 902 Packard building, Philadelphia, under C. E. Trommer has been discontinued.

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American Refractories institute, meeting May 18 at Pittsburgh, elected these eight new directors, for a 3-year term from May 1: U. S. Clark, secretary, Howard Co., New Haven, Conn.; J. Claire Evans, vice president, Denver Fire Clay Co., Denver; J. L. Green, president, Lacledé-Christy Clay Products Co., St. Louis; P. J. Sheehan, general manager, Niles Fire Brick Co., Niles, O.; C. H. King, district sales manager, General Refractories Co., St. Louis; G. R. McClintock, general sales manager, Osceola Silica & Fire Brick Co., Pittsburgh; E. F. Myers, president, Ironton Fire Brick Co., Ironton, O.; and J. T. Roberts, president, Stockton Fire Brick Co., San Francisco.

Obituaries

EDWARD B. LEIGH, 79, president, Chicago Railway Equipment Co., Chicago, died May 17 at his ranch in Kerr county, Tex. Mr. Leigh became associated with the railroad industry at 15, when he joined the St. Louis office of the Pennsylvania railroad. In 1892 he organized the Chicago Railway Equipment Co., becoming vice president and general manager. In 1906 he was elected president. Mr. Leigh was a director of the National Association of Manufacturers, the Railway Business association and was a member of the National Industrial Conference board.

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Fred J. Ahrens, 47, secretary and treasurer, Eberhard Mfg. Co., Cleveland, died May 14.

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Alexander Burger, president, Art Steel Co., New York, manufacturer of filing cabinets, died May 13.

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Maj. Frank Wood, 61, president of the Wood & Spencer Co., and the Cleveland Castings Pattern Co., Cleveland, died May 18.

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Calvin T. Steckel, for 45 years associated with the Russell & Erwin Mfg. Co., New York, hardware manufacturer, died at his home in Brooklyn, N. Y., May 16. He was 87.

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Cyrus Avery Whipple, 56, well known consulting engineer specializing in hydraulic and electrical projects, died at his home in Seattle, May 11.

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Gilbert E. Ryder, 52, vice president of the Superheater Co., New York and Chicago, died at his home in Larchmont, N. Y., May 17. He had been with the company since 1911 and was an authority on fuel conservation, especially for railroads.

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William P. Webb, 46, formerly purchasing agent for the Valley Mould & Iron Co., Hubbard, O., died at Sharon, Pa., May 11. He was born at Lincoln, Del., but spent most of his early life in Pittsburgh. He became purchasing agent for the Hubbard, O., company in 1914.

Here and There In Industry

GEORGE P. NICHOLS & BROTHER, 2131 Fulton street, Chicago, manufacturer of railroad machinery, have acquired the assets, equipment, patents and goodwill of the Stearns-Stafford Roller Bearing Co., Lawton, Mich., and will continue the manufacture of the latter's products at the plant at Lawton. A new company has been formed, George P. Nichols & Brother Inc., to carry on the business of the two companies. The Nichols company was formed in 1894 and in 1900 started the manufacture of transfer tables and electric turntable tractor for railroad use. The Stearns-Stafford company was formed in 1920 and applied roller bearings to the use of railroad equipment.

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George E. Gude Jr., New York, riveted and welded steel plate construction, has moved to 110 East Forty-second street.

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United Engineering & Foundry Co., Pittsburgh, has moved its main offices from the Farmers Bank building to the First National Bank building.

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Geometric Stamping Co., Cleveland, has appointed Dudley H. Smith, 221 East Twentieth street, Chicago, its sales representative in Chicago.

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John E. Livingstone Co., 2-246 General Motors building, Detroit, has been appointed sales agent for the hoist and crane division of Robbins & Myers Sales Inc., Springfield, O., in Detroit territory.

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Allsteel Press Co., 12015 South Peoria street, Chicago, has booked an order from the Metal Forms Corp., Miilwaukee, for a Verson allsteel double crank, triple-geared, twin drive press with bed 48 x 140 inches, shaft diameter 9 inches and shut height to top of bolster 20 inches.

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Flint Nut Co., Flint, Mich., recently organized with 90,000 shares of no par value, has bought the plant of the Acorn Nut Co., at Flint, and will continue the manufacture of finishing nuts, bolts and automotive parts patented by the Acorn company. Morton L. Jones is plant manager.

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Kuhlman & Harmon, machinists, is the name of a firm formed by Grover F. Kuhiman, formerly with the Bruckeridge & Ernstmann machine shop, and William F. Harmon, formerly shop superintendent for the Kayo Equipment Co., both of Wichita, Kans. The new machine shop has been established at 519 South Wichita street, Wichita.

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Hyman-Michaels Co., Chicago, dealer in steel and iron scrap and used materials, has moved its office at St. Louis, William Rosenthal manager, from the twenty-first to the eighteenth floor of the Railway Exchange building. The company's St. Louis yard is at 7000 North Broadway.

MIRRORS of MOTORDOM

DETROIT

AT THE three-quarter post in May it appears probable that this month's production of motor vehicles will exceed the 145,000 estimated for April. As all month, output is a matter of progress by Ford and steady schedules by Chevrolet and Plymouth more than neutralizing shrinkage by practically all other manufacturers.

If the estimate of 145,000 units for April is correct, then all of the production ground surrendered since August, 1931, has been retrieved, and April was the best in eight months for the automobile industry. Few other industries can point to such a comeback.

It is easy for Detroit to feel more optimistic—not genuinely optimistic, merely more so—because Ford and Plymouth are so largely Detroit institutions and Chevrolet's gear, forge, axle and spring plants are located here.

At this time Ford is making in the Rouge plant a larger proportion of parts than it will two months hence, when production has been stepped up appreciably. Up to now, also, steel mills in the Detroit district have booked relatively more Ford tonnage than mills in other districts.

Watch Parts Concentration

As Ford increases its schedule, the ripple made by parts and material requirements will naturally broaden. But the easier condition of most medium and high-price car manufacturers has a dampening effect on Lansing, Muskegon, Flint, Toledo and similar cities, and the tendency of General Motors to draw in its parts manufacture is creating no little apprehension in Michigan.

Flint, of course, has in Chevrolet an offset for Buick, which may be further relieved if production of the Olds is shifted to the Buick plant. Pontiac is hoping that the new General Motors low-price car—probably a six with only the absolute essentials for a chassis—will be assembled in the present Pontiac-Oakland plant.

About Wednesday of this week Ford will adopt a schedule for June and make certain commitments for steel and other materials. A substantial increase over the 40,000 scheduled for May is taken for granted. In the past week, Ford placed small pickup lots of steel, estimated at less than 10,000 tons altogether. The bulk of the June steel business is destined to come out late this week or early next.

Ford Now Over 2000 Daily

Ford the past few days has been slightly topping 2000 units a day, about evenly divided between the eight and the four. In addition, the flow of parts to various district assembly plants is increasing. There is a spirit in the Ford organization reminiscent of the early days of Model A, and there is reason for believing that Ford assemblies will be on the increase at least into the early fall.

For all the plain speaking in which General Motors executives have been indulging, with the exception of Chevrolet, General Motors experienced a good April. Its April sales, at 81,573 units, showed a gain of 67 per cent over the 48,717 of March. Dealers sold more cars than the factories produced, reducing their inventories.

Chevrolet in April built 55,432 cars, compared with 38,890 in March. The May total will not vary greatly from April. Plymouth shipments in April were almost four times as great as a year ago. Each week recently DeSoto has been breaking sales records. If the medium-price lines would turn in as good a sales report as the low-priced ones, the depression would be over for the automobile industry.

General Motors' support of June production promises to be spotty. It is understood that Buick intends building up a stock of about 2000 cars, then shutting down. Chevrolet's June schedule may not exceed 35,000, a decline of about 15,000 from May, but it is recalled that the May schedule originally was for 35,000, and then was increased to about 50,000.

Willys is making some refinements in the bodies of its low-price models, but is continuing the engine, which its engineers regard as the best ever put out by them. In May Willys output will be nearer 1800 than the 1500 originally scheduled.

There is additional evidence that spring, axle, frame and shock absorber design, at least for 1934 models if not for the 1933 ones, must take into consideration the low-pressure tire commonly referred to as the "doughnut, operating on 12 to 15 pounds. Rockne as well as Graham and DeSoto is offering it as optional equipment, and in some cities Chevrolet dealers are offering it.

Seek Standardized Chassis

Ford is not the first manufacturer to put different types of engines in identical chassis. The present Olds chassis accomplishes this; Hudson and Essex were largely identical last year; the former Erskine and low-price Studebaker chassis were similar or practically so . . . . Over a year ago it was reported that Ford planned to abandon f. o. b. prices for delivered ones; now the National Automobile Chamber of Commerce is debating such a policy . . . . To balance inventories and prevent a shutdown, Ford parts frequently are transported by plane from Detroit to outlying assembly plants . . . . Government statistics show retail automobile financing in March totaled $51,318,964, for 141,187 cars, compared with $44,829,138, for 123,574 cars, in February.

EDITORIAL

Industry Hails "Invigorated Policy" of Institute

> "I am pleased to report that the directors of your institute have determined to broaden the scope of this body. The institute has done good work in the past but in times when we have so many problems in common it is important to have a more invigorated policy to extend our facilities for presenting a unified front for our industry.
>
> "We have added to personnel, added to departments and begun to organize programs of constructive work for the benefit of the industry."
>
> —*From the address of Charles M. Schwab.*

THIS reference by President Schwab to impending expansion in the activities of the American Iron and Steel institute will be gratifying to a large majority of members and to thousands of other individuals identified with the iron and steel industry. For many years there has been a widespread feeling that the institute has failed to take full advantage of its unusual oportunities for service. That its directors have decided to correct this situation is welcome news.

Mr. Schwab did not describe the nature of the broadened scope of the institute's work, except that he hinted that "policies which will conduce to the improved condition of employes" will be covered in the new activities. This may imply that the institute will be prepared to study employment insurance, workmen's disability, compensation, hours of labor, pension plans, etc. for the purpose of recommending the industry's attitude on important questions of this kind.

Co-operative Study of Common Problems Will Save Money and Confusion

Properly administered this work would save thousands of dollars annually for steel companies. Under existing conditions, each corporation is obliged to conduct independent investigations on the feasibility of schemes proposed for the protection of employes. The effort is duplicated many times over and the results are not always satisfactory. Co-operative study of these questions would be more thorough and economical.

The same idea of co-operative research by the institute could be applied advantageously to many other problems. In the field of new markets for steel there is important work that only a strong organization such as the institute can do effectively and without duplication of effort.

For example, consider the problem of rehabilitating the "blighted" areas of cities and towns. It now is clear that the millions of persons living in unsanitary hovels can be housed in better modern buildings at a rent they can afford to pay and with a profit to the owner. Social workers, city plan commissioners and architects have made a good start on their part of the task. The challenge now rests with the bankers to apply sound financing to the projects and with producers and manufacturers to develop the necessary materials and methods of assembling them.

Already it seems that steel is one of the few materials that can meet the low cost requirements of this problem. One company now is prepared to manufacture in its plant a complete bathroom of steel, which can be installed by common labor. Several companies are ready to supply complete steel kitchens in knock-down form. Others are experimenting with steel walls, floors, etc.

Institute Directors Should Consider Market Development Work

Perhaps this is the most important market opportunity offered to the steel industry in recent years. If, as at present, individual companies continue to investigate and develop this market haphazardly, progress will be slow, money will be lost in duplicated effort, and possibly some competing material will get a head start on steel.

But if the American Iron and Steel institute would study this problem; would work with the architects, social workers, bankers, etc. throughout the pioneering period; and would represent in the initial stage the interests of the steel companies and their fabricating customers—then the market would be assured for steel, the cost would be much lower and progress would be speeded.

This is but one of many activities in which the institute could render invaluable service. Too often in the past steel producers have neglected market development to the extent that steel fabricators and other customers in desperation have been obliged to carry the burden themselves. They have done good work in this respect, but their resources usually have been limited.

It is to be hoped that the directors of the institute, in formulating the broadened activities of the organization, will give serious consideration to its opportunities in the field of market development.

THE BUSINESS TREND

Business Awaits Decisions At Washington

INDUSTRY is in a stalemate from which it will be difficult to escape as long as the important questions of taxes and federal economy remain unsettled. Members of the senate and house seem more disposed to heed the clear-cut mandate of the public for more action and less squabbling, but progress in tax and appropriation legislation still is painfully slow.

The conservative coalition group in the senate is struggling manfully to get somewhere with the revenue bill submitted by the finance committee. Senators Couzens and Long head a bloc desiring to restore wartime rates on individual incomes, but their first effort in this direction was squelched. The coalition bill—admittedly a compromise between wartime income levies and a general sales tax—provides for 3 per cent tax on the first $4000 of income, 6 per cent on the next $4000, etc., and also for a series of the so-called nuisance and excise taxes.

At the present writing it appears that the compromise bill has a fair chance of adoption. If the conservative coalition bloc fails to put it through, the general sales tax probably will stand a better chance of acceptance than the high income tax. In fact, there is a growing conviction that adoption of the sales tax in the earlier stages of discussion would have been the simplest way out of the tax dilemma.

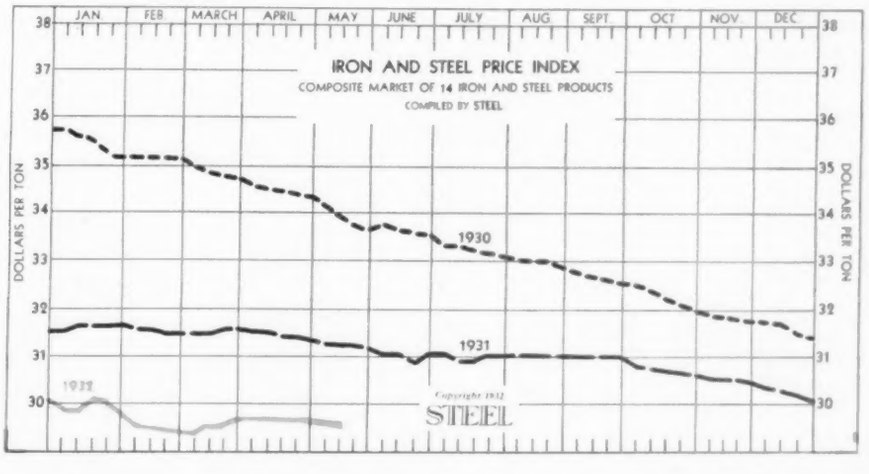
Another factor of importance to business appears in the now actively discussed proposals of public works programs to promote recovery. The Robinson-Hoover idea calls for extending federal credit to projects that are "income producing" or "self-sustaining." The plan sponsored by Senators Wagner and LaFollette would apply to public works whether or not they are capable of producing income.

Nation Wants Congress To Balance Budget and Go Home

The Robinson-Hoover plan would be subject to fewer abuses than the other, but even it would require careful administration if it were to be effective.

Lack of definite decisions on these several important questions of national policy serves as a powerful brake on business. Industry would hail members of congress as benefactors if they would (1) pass a tax bill, (2) cut government expenses, (3) empower the President to deal with international debts and other matters that will come up during the summer months and (4) adjourn as quickly as possible.

Business would react favorably to such a program.



1932

May 14	$29.64
May 7	29.68
Apr. 30	29.70
Apr. 23	29.74
Apr. 16	29.74
Apr. 9	29.74

1931

May 13	$31.37
May 6	31.40
Apr. 20	31.49
Apr. 22	31.51
Apr. 15	31.59
Apr. 8	31.67

Enameled Ware Sales Best in Several Months

Shipments of enameled ware in March were the best since September, 1931, a total of 276,725 dozen being in excess of the 270,198 dozen in February, 1932, and of nearly every month in 1931. Department of commerce figures follow:

In Dozens

1931	Total	White	Gray and Colored
March	312,916	103,375	209,541
3 mo.	869,353	285,104	584,249
April	281,339	99,218	182,121
May	264,953	106,091	158,862
June	232,672	81,588	151,084
July	246,858	83,483	163,375
Aug.	251,544	90,546	160,998
Sept.	307,068	97,635	209,433
Oct.	255,782	81,866	173,916
Nov.	197,080	62,904	134,176
Dec.	233,267	54,565	178,702
Year	3,189,916	1,043,000	2,096,916
1932			
Jan.	198,627	57,973	140,654
Feb.	270,198	82,899	187,299
March	276,725	80,234	196,491
3 mo.	745,801	221,352	524,449

Steel Castings Output in March Year's Largest

Production of steel castings in March was the largest for this year, though not reaching the total of the closing months of 1931, according to reports from 80 per cent of the capacity in the United States to the department of commerce. Bookings fell off slightly from February. Comparisons are as follows:

1931	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
March	48,184	33.1	56,755	39.0
3 mo.	135,314	31.0	152,597	34.9
April	46,039	31.6	48,282	33.2
May	39,052	26.8	43,154	29.6
June	26,136	18.0	35,018	24.1
July	32,869	22.6	31,751	21.8
Aug.	27,458	18.9	30,186	20.7
Sept.	23,073	15.8	26,948	18.5
Oct.	22,854	15.7	24,113	16.6
Nov.	20,001	13.7	23,139	15.9
Dec.	20,799	14.3	22,064	15.2
Year	393,595	22.5	437,252	25.0
1932				
Jan.	17,393	11.8	18,395	12.5
Feb.	17,015	11.6	18,759	12.8
Mar.	16,593	11.3	20,433	13.9
3 mo.	50,952	11.6	57,648	13.1

Electrical Goods Orders In Sharp Decline

Orders for electrical goods during first quarter of 1932, as reported to the department of commerce were valued at $99,351,480, compared with $151,586,124 during last quarter of 1931 and $182,485,841 for first quarter of 1931. The reports are from 84 manufacturers, representing a large part of the industry and indicating the trend. Comparisons follow:

Quarters	1931	1932
First	$182,485,841	$99,351,480
Second	224,347,794	.....
Third	157,303,909	.....
Fourth	151,586,124	.....
Total	$715,723,668	.....

Stoker Sales in March Continue Downward Trend

Sales of mechanical stokers in March were below those of February and January, continuing the steady decline of several months. Reports from 55 identical manufacturers, 42 of whom manufacture large commercial and high-pressure plants, as gathered by the department of commerce, provide the following figures.

1931	Stokers sold	Fire tube boilers	Water tube boilers
March	118	79	39
3 mo.	408	279	129
April	124	88	36
May	167	113	54
June	212	149	63
July	253	202	51
August	333	261	72
September	336	279	57
October	285	231	54
November	206	170	36
December	139	117	22
Year	2,463	1,889	574
1932			
January	*115	70	*45
February	*89	*63	*26
March**	83	60	23
Yr.	150	16	....

*Revised **Preliminary.

Foundry Equipment Sales Index at Low Point

Foundry equipment orders, as represented in the monthly index of the Foundry Equipment Manufacturers association, covering 17 producers, show a sharp drop to 13.7 from 27.5 in March and 27.6 in February. In April 1931 the index was 57.7. Comparisons for four years follow:

	1932	1931	1930	1929
Jan.	20.5	65.3	160.1	180.5
Feb.	27.6	54.7	196.4	197.0
March	27.5	174.4	164.1	209.4
Apr.	13.7	57.7	122.8	172.6
May	.....	54.1	92.7	177.7
June	.....	40.9	102.1	177.3
July	.....	38.7	90.6	219.3
Aug.	.....	16.9	85.2	229.5
Sept.	.....	31.9	91.0	216.3
Oct.	.....	44.8	50.0	245.3
Nov.	.....	17.2	45.3	128.6
Dec.	.....	26.3	59.8	208.0

Base: Average monthly shipments for 1922-23-24 taken as 100.

Locomotive Sales Mirror Lethargy of Railroads

Delayed buying by railroads is in evidence in railroad locomotives as well as in freight cars. In March three locomotives were sold, compared with 5 in February this year and ten in March, 1931. Unfilled orders at the end of March totaled 170 locomotives compared with 115 at the end of March, 1931, and 582 at the end of March 1930. Figures by the department of commerce show comparisons for a year:

	Shipments		Unfilled Orders	
1931	Domestic	Foreign	Domestic	Foreign
March	10	1	95	20
3 Mo.	41	....	....	....
April	15	1	87	19
May	26	....	65	19
June	23	....	123	19
July	15	1	113	19
August	3	13	106	9
Sept.	7	....	149	9
Oct.	11	1	139	8
Nov.	7	....	153	8
Dec.	2	....	162	8
Yr.	150	16	....	....
1932				
Jan.	....	....	163	15
Feb.	1	4	162	11
March	....	3	162	8
3 Mo.	1	7	....	....

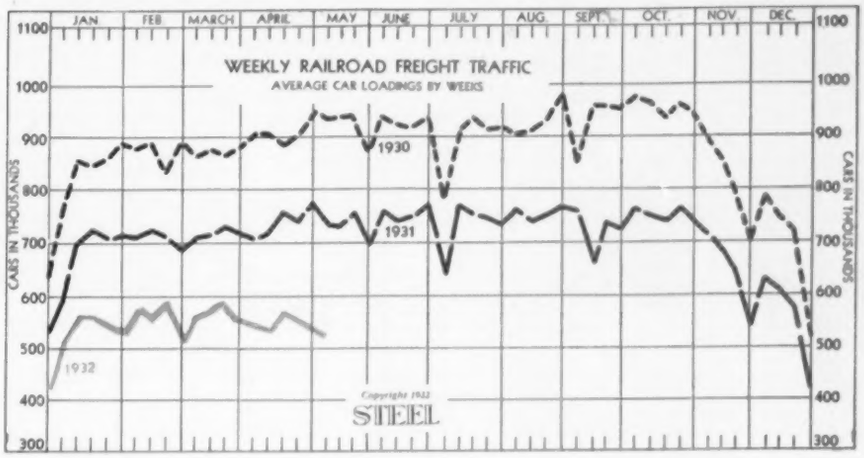
Machine Tool Orders Show Further Loss

Total actual orders for machine tools in February showed the lowest index of the present downward movement, at 35.6, compared with 52.8 in January. The index is by the National Machine Tool Builders association. The relation of unfilled orders to shipments made a slight change downward. Comparisons are shown below:

1931	*Index A	*Index B	*Index C	Total
March	109.2	133.4	180.9	117.6
April	97.7	130.3	95.0	105.1
May	81.4	104.5	105.7	87.2
June	74.3	70.3	80.7	73.6
July	52.1	95.4	66.1	61.5
Aug.	69.6	72.5	105.0	71.7
Sept.	50.2	73.9	72.2	56.0
Oct.	40.3	59.3	54.1	44.5
Nov.	50.1	54.7	46.7	50.8
Dec.	65.1	76.6	67.3	67.6
Yr. Av.	68.6	89.7	86.3	73.9
1932				
Jan.	52.8	78.4	81.0	59.1
Feb.	35.6	43.0	53.8	37.6

*Note—Index A, base over $50,000; Index B, bases $10,000 to $50,000; Index C, base less than $10,000. Base: average shipments for years 1922-23-24. Totals: The total of all reports is not an average of A, B and C, but the sum of each item in percentage of the total base.

	1932	1931
May 7.....	533.677	745,740
April 30.....	554,012	774,742
April 23.....	562,380	758,503
April 16.....	566,729	759,494
April 9.....	544,806	737,934
April 2.....	544,961	727,852

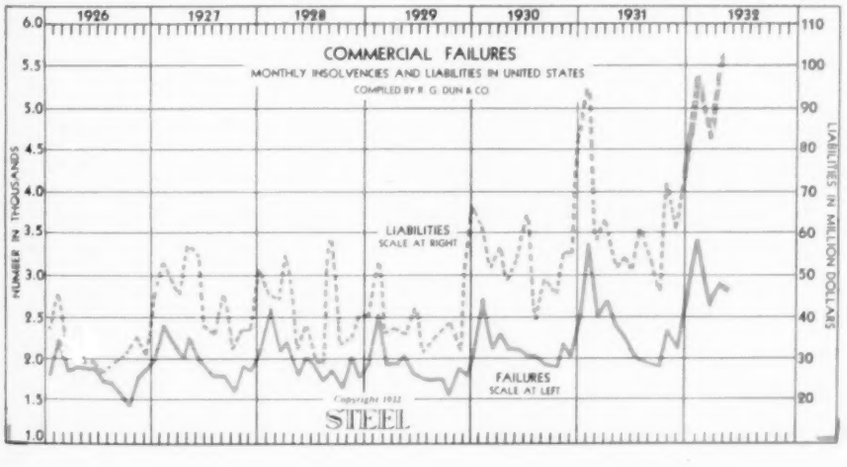


Freight Car Loadings Down In First Week of May

Loadings of revenue freight for the week ending May 7 totaled 533,677 cars, according to the American Railway association. This was a decrease of 20,335 cars under the preceding week, 212,063 cars below the corresponding week in 1931, and 398,669 cars under the same period two years ago. Due mainly to seasonal influences, coal loadings were largely responsible for the week's reduction in freight traffic, with a loss of over 10,000 cars below the preceding week. Grain loading for the week totaled 28,575 cars, or 4166 cars below the preceding week. Loading of miscellaneous freight, forest products, ore and live stock each registered declines, while loading of coke and merchandise in less than carload lots made slight gains.

Commercial Failures Decline, As Liabilities Climb

Although commercial failures throughout the United States remain above the average, the report for April with 2816 insolvencies, shows a slight recession from the preceding month when 2951 were reported. In comparison with the defaults of March, this year, those for April show a drop of 4.6 per cent but are 18.2 per cent above the 2383 reported for April last year. According to statistics compiled by R. G. Dun & Co., the indebtedness for April rose to the unprecedented height of $101,068,693, of which 61.8 per cent is composed of insolvencies having an indebtedness of $100,000 or over in each instance. In no previous April has the number of failures or liabilities been so high as in the present year.

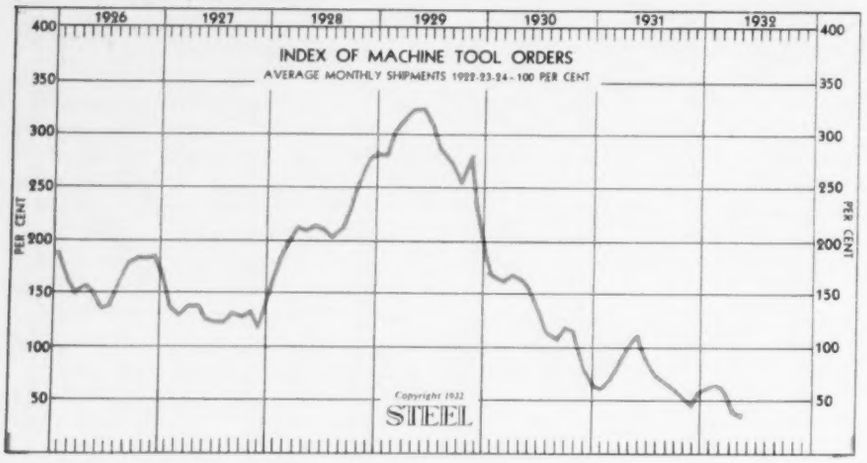

1926 1927 1928 1929 1930 1931 1932
COMMERCIAL FAILURES
MONTHLY INSOLVENCIES AND LIABILITIES IN UNITED STATES
COMPILED BY R. G. DUN & CO.
NUMBER IN THOUSANDS
6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0
LIABILITIES IN MILLION DOLLARS
110 100 90 80 70 60 50 40 30 20
LIABILITIES SCALE AT RIGHT
FAILURES SCALE AT LEFT
Copyright 1932
STEEL

Liabilities

April, 1932	$101,068,693
March, 1932	93,760,311
April, 1931	50,860,000

Number

April, 1932	2,816
March, 1932	2,951
April, 1931	2,380



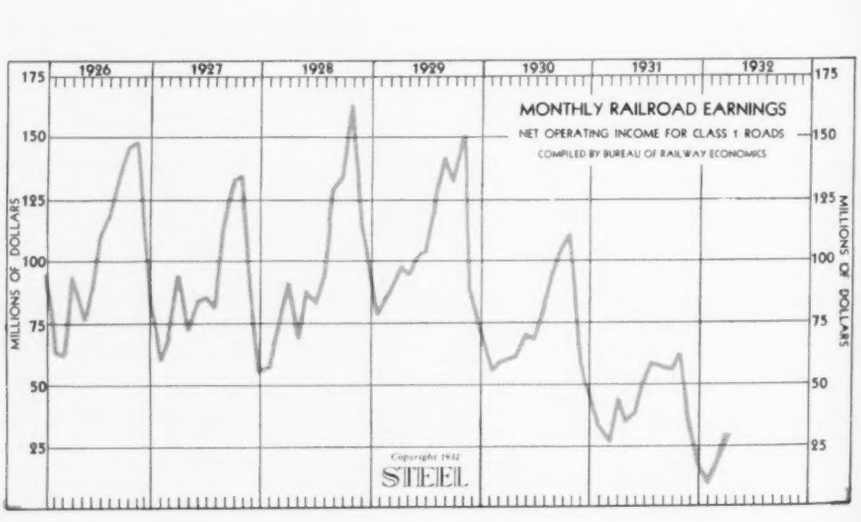
	Per Cent
April, 1932	37.1
March, 1932	43.1
April, 1931	102.1

Index of Machine Tool Orders Slips Downward in April

With a moving average of 37.1 machine tool orders in April dropped to a new low. The peak thus far this year was in January when a moving average of 59.2 was registered. Since that time the index has declined steadily. During the similar 4-month period last year, the trend line rose steadily from 65.3 in January to 102.1 in April. Although the moving average continued to recede, new orders in April, 1932, came through at a better rate than during the preceding month. According to the report of the National Machine Tool Builder's association, actual orders were up nearly 10 points to 41.1, while shipments and unfilled orders were each off 1 point.

Railroad Earnings Gain; First Quarter Income Nets 1.28 Per Cent

Class I railroads had a net railway operating income in March of $32,289,300, which was at the annual rate of return of 1.57 per cent on their property investment. In March, 1931, net railway operating income amounted to $46,478,184 or 2.25 per cent. Operating expenses in March this year totaled $222,482,167, compared with $291,616,603 in the same month in 1931, a decrease of 23.7 per cent. During the first quarter of 1932 the net operating income totaled $66,028,475 or a return of 1.28 per cent, according to the Bureau of Railway Economics. In the first three months of 1931, net operating income was $108,533,156 or 2.10 per cent on their property investment.



Rail Earnings	
March, 1932	$32,289,300
Feb., 1932	22,042,614
March, 1931	46,478,184

Stainless Steels Are Firmly Established In Industry

—Courtesy Charles Perry Weimer

THE series of alloy steels now being developed from the discovery of the noncorroding characteristics of high-chromium alloys, usually known by their trade name "stainless steels," are new products of peculiar interest in view of their potentially wide significance in the industrial world. They already have disturbed age-old economic relations. They are possible on any scale of production necessary. They require, not so much different equipment in their production, as a different viewpoint.

In a most comprehensive paper, "Stainless Production—Equipment, and Method of Manufacture," E. C. Smith, assistant district manager, Central Alloy District, Republic Steel Corp., Massillon, O., makes clear that stainless steels are now definitely established as production materials although they will be given attention all out of proportion to their tonnage for some years.

Stainless irons and steels, says Mr. Smith, are essentially alloys of iron and chromium; there are many stainless irons and more stainless steels. The common property of the conventional product is chromium exceeding 10 per cent, with the range usually between 10 and 20 per cent. A consideration of the sources of chromium and the relation of this element to the ferrous materials and to competitive metals proves interesting.

Chromium is quite common. The usual source is the mineral chromite, usually designated by the formula $FeO.Cr_2O_3$. Pure, it would contain 68 per cent chromium oxide; commercially it is closer to 50 per cent, with an extremely wide variation in chemical composition. The present large sources of ore are Rhodesia and New Caledonia; small tonnages are produced in many parts of the world. It is of peculiar interest that no major development exists in this country, which is at the present time by far the largest consumer.

It has been estimated that the earth's crust at the surface contains 5 per cent iron and 0.066 per cent chromium. This latter figure seems small, but it exceeds nickel, copper, zinc and lead by wide margins. Chromium therefore may be considered as present in sufficient quantity to develop an industry exceeding in volume copper and zinc, and far exceeding nickel and lead. Since present alloys indicate the tonnage volume of stainless to be approximately six times the chromium required it is possible to develop a business far exceeding the copper industry. We may reasonably estimate the supply far in excess of visible demand.

At this point in his paper, Mr. Smith begins a technical description of the production processes including: Conversion of chromite to stainless steels, ingot casting and ingot mold design; remelting stainless scrap; ingot soaking and rolling; billet chipping and grinding; rolling to bars, sheets and strip; pickling and polishing. Details of these processes, as described by the author, will be presented in early issues of STEEL.

In future relations of stainless steel to general industry, Mr. Smith states any prediction is but a guess. Until it has been established definitely what property is essential for each of the

ON this and suceeding pages STEEL presents to its readers brief abstracts of papers read and discussed at the annual spring meeting of the American Iron and Steel institute in New York, May 19. In most cases, the papers are of such length as to preclude extensive republication, but the subjects are of timely interest to manufacturers and users of steel and for that reason are herewith abstracted. The papers deal with the manufacture of stainless steel; utilization of blast furnace and coke oven gas; mining taxation in the Lake Superior region; economic value of the steel industry to the United States; steel quality; and nondestructive testing methods.

conditions encountered, many misapplications will be made. The present production shows three fields in which the product is established—heat resisting materials, food handling and decorative material. The present production of decorative material is important and is increasing. It will tend toward strip in the future. Food handling is important both from the appearance and the general satisfaction given by the product.

Alone in Heat Resistance

The field which has appeared to hold great possibilities is the heat resisting field. The ability of these highly alloyed steels to withstand scaling and corrosion and to retain physical properties at elevated temperature is unique in the metallic products field. The decorative products and food handling materials are subject to direct competition, but stainless steels stand alone in the field of metallic refractories.

Not only are these materials useful in direct flame, but they have opened up new design possibilities due to their ability to handle heavy loads at temperatures much higher than possible with simple steels. The entire power generation equipment of the modern plant eventually will be constructed of such materials or their modifications. The oil refining industry is a large customer at present and will consume more as the problems are cleared.

The near future does not promise any great reduction in the cost of these products. Sufficient chromium to produce desirable properties would make cheap material out of the question regardless of carbon content. For this reason ,it seems unwise to predict many thousands of tons of this material annually for some period of time.

Production problems are a factor at present. Stainless steel will increase rapidly with better business conditions, but is and will remain a special product for some time to come. It will be much easier to work with skilled crews trained to handle special materials in small lots. It seems a far day when any single mill will produce only such material. The extreme variety of products possible from any one type of analysis would indicate a breadth of application beyond the possibility of a single mill to produce.

In Class of Special Steels

For this reason, the product will gradually be produced in all the plants equipped to make special steels. This means that for some time it will be the product of tool steel mills. The large production plants will produce the flat products in a large way; the bar products will continue as tool steels; wire and special shapes will develop slowly. Production will be scattered widely, many plants furnishing small amounts and specializing on the production of a limited number of products.

With time will come the mill provided with a full line of equipment to specialize in this commodity. Such a mill will be an organization of men trained to understand the production of this metal which comes more closely to the ideal commercial metal than any now developed.

Further Study of Steel Behavior Is Needed

IN SPITE of elaborate precautions in steel testing, and in spite of narrowing down of chemical limits, it has become apparent that steel quality is an elusive property which is not manifest clearly from results of conventional physical and chemical tests. Breakage, due to embrittlement, mechanical wear and corrosion contribute to the failure of steel in service, and their occurrence is in a large measure regulated by the varying behavior or sensitivity of different steels.

Surveying this factor of sensitivity, H. W. Graham, general metallurgist, Jones & Laughlin Steel Corp., Pittsburgh, in a paper "A Modern Conception of Steel Quality," pointed out that in studying the behavior of steel under conditions of heat treatment, cold working or natural aging it is essential to perceive that each individual piece of steel has its own characteristic response to these conditions. It is not that steel as a whole responds to these conditions, but that each particular piece reacts to the extent of its own capacity, which may be quite different from the capacity of the neighboring piece.

The characteristic reaction rate of a piece of steel toward brittleness or hardness may be called sensitivity; in other words, the sensitivity of a piece of steel is its characteristic degree of reaction to conditions of thermal treatment, cold work, natural aging or similar situations.

Metallic alloying elements, such as manganese, nickel, chromium and the like have a profound effect upon the physical properties of steel. Apparently sensitivity varies widely with different percentages of these elements. On the other hand, from the practical point of view, little error is involved in considering sensitivity as a function of the carbon steel base. It is at least correct to conclude that if a substantially complete control of the sensitivity of carbon steel were achieved then the nature of a alloy steel would be much more simple and definite than is now the case.

In any several melts of steel manufactured by the same process and of the same chemical specification, the variation in amount and in effectiveness of form of the activating elements will result from two conditions: Variation in raw material; and variation in conditions of process. Without attempting to consider the wide diversity of steel scrap and its possible influence on steel quality, the part played by pig iron is undoubtedly a dominant one. Gradually more and more evidence comes to light that there are obscure phases of iron quality clinging tenaciously to the metal through the steelmaking operations and existing to a greater or lesser degree in the finished steel.

Control Not Yet Achieved

Practical examples of steel sensitivity include varying rate of response to annealing, embrittlement of structural sections, breakage in reverse bends, hardening in punching, breakage in shearing, embrittlement in punching, and many others which often are revealed after heat treatment, welding, galvanizing, etc.

It is taken for granted that the steelmaker must accept responsibility in that he has not yet achieved control of sensitivity and is therefore unable to say that one heat of steel after the other will react to cold work in the same degree. On the other hand, the purchaser or fabricator is expected to be governed by the actualities of the situation, to write his specifications in accord with technical fact, and to conduct his operations in full cognizance that the sensitivity effects are present. Whatever the difficulties of the purchaser for fabrication or service, and whatever the efforts of the steel manufacturer to meet these difficulties, it is true that improvement in the present level of quality toward precision and satisfaction must wait until a considerable number of technical questions have been answered by the joint investigations of the metallurgist,

chemist, physical chemist, and physicist.

However, in presenting this conception of sensitivity it is earnestly desired to avoid giving the idea that sensitivity is an always undesirable characteristic—an incorrect and misleading view. So far as sensitivity is concerned it is certain that sensitive steel is in certain applications much more useful and desirable than insensitive steel.

Little reflection is required to show that in the face of the vast and complex field of unexplored or inadequately explored territory, progress must be slow, irregular and inefficiently achieved by the unorganized efforts now in existence. Individual agencies of a high order of scientific ability are here and there achieving results of value; but aside from the obvious drawback of unnecessary duplication, there is all too little of that element of correlation which might vastly speed up progress with little increase of personnel or cost.

Appraises Value of Steel Industry

REASONING from the premise that economics is concerned with those human activities which have to do with making a living and with the goods upon which humanity's well-being depends, leads to the conclusion that the economic value of steel lies in that industry's abundant contribution to both these factors, plus its potential influence as a source of demand and supply in sustaining other industries and population.

This is the appraisal made by George H. Charls, president, National Association Flat Rolled Steel Manufacturers, Cleveland, in his paper, "The Economic Value of the Steel Industry to the United States." The author states that "we must accept the steel industry as first in peace, first in national defense, and first in the cause of civilization."

Enormous Purchasing Power

By statement of fact and statistics, Mr. Charls points out the tremendous purchasing power of the steel industry. With its invested capital of approximately five billion dollars and its inter-relations with other industries, to many of which it is the principal or sole support, the industry in 1929 spent $3,862,873,486 in purchase of materials, fuel and electric current, and paid $1,691,059,193 in salaries and wages, a total expenditure of $5,553,932,679.

In 1929, the steel industry employed 10 per cent of all employes; paid 10 per cent of all wages; produced 10 per cent of the total value of all manufactured products; and consumed 20 per cent of all horsepower, 17.94 per cent of all fuel oil; 7.36 per cent of all gasoline and kerosene, 15.89 per cent of all natural gas, 73.57 per cent of all manufactured gas; 12 per cent of all other fuels, and 13.34 per cent of all purchased electric energy.

Nondestructive Testing Is Increasing Usefulness

NONDESTRUCTIVE testing methods may be classified as magnetic, radiographic and sonic. Their application depends largely upon the detection of some heterogeneity in a field of flux —whether that flux be electric, magnetic, actinic or sonic and whether that field be that of the passage of an electric current, a magnetic field, a penetrating light ray or a sound wave.

All of these methods of testing are described in detail in the paper, "Nondestructive Testing Methods in the Iron and Steel Industry," by Robert F. Mehl, assistant director, research laboratories, American Rolling Mill Co., Middletown, O.

In Commercial Use

Magnetic characteristics of a ferromagnetic object may be excited by either direct or alternating current. One of the two most important applications of direct-current methods is that used by the General Electric Co. for inspecting turbine bucket wheels. This detects defects by the variations introduced in the reluctance of a direct-current magnetic circuit in which variations can originate only in the disks of the turbine. The disk is rotated slowly between two pole pieces of the electromagnet; within each of the poles is imbedded a pick-up coil, astatically wound in order to avoid the disturbing effect of eddy currents. These coils are connected to a galvanometer which registers the reluctance of the part of the disk between the poles at any instant.

Rail Flaw Detector

The other important direct-current method was developed by the Sperry Products Co. for detecting flaws in rails. Two magnetic coils travel close to but above the rail, connected in opposition. Inequalities in the magnetic field upset the balance in the two opposed coils and the electromotive force thus generated is amplified to operate a recording pen.

Applications of alternating-current methods are of greater variety. One example involves two coils or solenoids activated on a primary circuit of 25 or 60 cycles wound so as to produce fields of equal intensity. A standard piece of material is placed in one coil and the piece to be tested is inserted in the other. This is essentially a comparison method.

Application of iron powders to detection of surface defects is a modification of the magnetic leakage method. If the surface of a magnetized body (material to be test-

Comparison of X-Ray and Gamma Ray Methods

X-RAYS	GAMMA RAYS (from radium)
1. Short exposure-times on thin section.	1. Relatively long exposure-times on thin section.
2. Prohibitively long exposure-times on sections above 3½ inches.	2. Exposure-times on thick sections not excessive.
3. Good contrast in radiographs.	3. Reduced contrast in radiographs.
4. Exposure-times critical; irregular objects must be exposed to sections.	4. Exposure-times not so critical; irregular objects can be exposed at one time.
5. Considerable scattering, requiring corrective measures.	5. Little scattering, requiring ordinarily no corrective measures.
6. Equipment portable only in a limited sense.	6. Equipment entirely portable.
7. Very few radiographs can be taken at one time.	7. Large number of radiographs can be taken at one time.
8. Cost now well known and reasonable.	8. Cost not yet well established; probably reasonable.
(a) Capital investment not great, but	(a) Capital investment is great, but
(b) Depreciation is great.	(b) Depreciation is inappreciable.

ed) a fine magnetic powder is brought in dry form or suspended in oil, concentration of the powder will occur at the regions of discontinuity.

Radiographic methods depend upon the fact that penetrating light waves—X-rays and gamma rays—suffer a loss of intensity when passing through matter. This loss is determined by wave-length of the ray, composition of the object penetrated and thickness of the object. Detection may be made by a photographic film or plate, a fluorescent screen or by a gas ionization device. The photographic method is most important now.

Methods Are Compared

Exposure principles and details of X-ray radiography for industrial use are discussed at length by the author. When gamma rays from radium are used, there is required only a small capsule containing radium or radium emanation, and a photographic film.

The author compares X-ray and gamma ray methods as shown in the table on Page 29.

Sonic methods are based on the fact that an undefective object emits a clear ring when struck, whereas a defective object emits a duller sound. A medical stethoscope now is used in inspecting welds to pick up only that portion of sound coming from the spot of interest. This method, while comparing favorably with radiographic inspection, appears to be limited to welds.

Throughout the paper the author describes numerous typical applications of the various nondestructive testing methods and discusses the advantages and disadvantages of each.

Iron Ore Taxation Proves Handicap

MINNESOTA and Michigan are in need of new and modern conceptions regarding the taxation of iron ore properties. Their policies are at variance with their best interests, imposing a burden under which the iron mining industry cannot function and develop properly.

In his paper, "Mining Taxation in the Lake Superior District," Clarence B. Randall, vice president, Inland Steel Co., Chicago, points out that taxes have even hampered companies in providing employment in periods when most needed. Stocks at lower lakes far exceed requirements; therefore, there is no incentive to operate mines except a desire to provide financial assistance to mining communities.

If ore could be produced in Minnesota during winter months, and stocked, mining could be carried on to advantage to all interests; but an extra tax is levied on iron ore in stockpile May 1. To avoid the tax the ore thus mined to provide relief would have to be shipped promptly. This involves a cash outlay for royalty, and $1.81 per ton in transportation charges on ore that is not wanted at lower lakes, and for which in many instances no storage space is available.

More fundamental, however, is the tendency of heavy taxes to restrict development, to force consumers to look elsewhere for iron ore supplies, and to turn more to the use of scrap. The tax burden tends to delay the working out and application of new methods for beneficiating low grades ores.

Discrimination Evident

In the beginning it evidently was the public policy in Minnesota and Michigan to consider iron ore reserves as the state property. As these resources could not be taken from their private owners by due process of law it became a settled purpose to take as much as possible through the medium of taxes. Mr. Randall does not charge the states with such a purpose; but he points out the evident discrimination; the determination to make the ore industry pay relatively more than any other form of enterprise. This is borne out by the multiplicity of taxes designed especially for the ore industry.

Taxes 75 Per Cent of Income

According to the Minnesota state tax commission, "net income" for 47 mining companies showing a profit for 1930 was $38,343,286. Taxes amounted to $16,543,334. Therefore, the commission gives the percentage of taxes to net income as 43.14 per cent. But Mr. Randall shows that when the taxes are deducted the actual net income drops to $21,799,952, as compared with $16,543,334 for taxes. "In other words," he says, "in 1930 taxes were 75 per cent of the real net income."

Mr. Randall's analysis of the tax problem will be present more fully in a subsequent issue of STEEL.

Providing Flexibility in Plant Gas Demands

CONFRONTED with an increased demand for coke oven gas by expanded finishing mill operations, the Weirton Steel Co., Weirton, W. Va., in 1930 installed blast furnace gas underfiring for heating two of its three batteries of coke ovens. By so doing, the company not only obtained the additional fuel, but evolved an economical and flexible gas distribution system.

How the system operates is described in the paper, "Flexibility in the Use of Blast Furnace and Coke Oven Gas in a Steel Plant," by Charles R. Meissner, superintendent, by-product coke plant, and Julius H. Strassburger, assistant chief engineer, of the Weirton company.

Large Surplus Available

The two blast furnaces produce daily approximately 198,000,000 cubic feet of gas, of which 55,000,000 feet is used in the furnace stoves and the remaining 143,000,000 is surplus gas available for other use. This surplus formerly was all used for steam generation, but now 43,000,000 feet can be used for heating the coke ovens, leaving 100,000,000 feet for steam generation. To replace the 43,000,000 feet previously used for steam generation, slack coal of low cost now is used.

When pushing 14-hour coke, there is available a total production of 26,300,000 cubic feet of coke oven gas per day from the 111 ovens. With 62 per cent of the total gas as surplus, there is 16,300,000 feet for general mill distribution when underfiring with coke oven gas. When releasing the total gas from two batteries of 74 ovens by the use of blast furnace gas underfiring, the surplus gas for mill distribution is increased to about 23,000,000 feet daily.

This surplus coke oven gas is used throughout the steel plant, sheet and tin mills and strip mills for a multiplicity of operations, principle among which are: Box annealing furnaces; sheet and strip normalizing; tin pots; galvanizing and terne pots; sheet and pair furnaces; bloom reheating furnace; tie plate reheating furnace; lacquer ovens; sintering blast furnace flue dust; deoxidizing for bright annealing; etc.

In distributing coke oven gas to the finishing departments, there is

(*Please turn to page* 34)

Are Modifications Needed In Welding Code?

BY ROBERT E. KINKEAD
Consulting Engineer, Cleveland

IT IS a matter of considerable importance to industry as to how the new welding code of the American Society of Mechanical Engineers withstands the commercial application which is beginning to be made of it. Compared with the large number of pressure vessels which have been welded, few have been fabricated in accordance with these new code rules.

The implications of the rules are important. If the code is correct, most of the welding which has been done in the last five years on buildings, pressure vessels, machinery and other industrial products should be condemned and the equipment taken out of service in the interest of safety. That is a situation worthy of consideration by any manufacturer or contractor who is doing welding and carrying his own insurance against faiiure of his product in service.

The welding code was written by able and responsible engineers, but the difficulty of writing such a document is small indeed compared with the difficulty of applying it. The regulations are being interpreted and modified, and the manner in which such interpretations and modifications are made involves some millions of dollars of expenditures on the part of both manufacturers and users of welded pressure vessels as well as other welded construction.

No Criticism Intended

In attempting to forecast some of the modifications which are likely to be made in the code for the fusion welding of pressure vessels, no criticism of the boiler code committee is implied. Less fallible bodies have had their work modified. The boiler code committee has precedent and mechanism for making changes. The underlying forces of economics compel the production of unquestionably safe welded construction at steadily falling costs, and these declining costs must come from better engineering, not from less safety. Such is the basis of these forecasts

It appears quite likely that Class 1 construction will be narrowed down to power boiler drums and that it will be so designated. This will eliminate a good deal of confusion among engineers who use the code.

A further adjustment of the rules for the fusion welding of power boiler drums probably will be to the effect that welds around openings shall be designed to permit X-ray or gamma-ray inspection of the welds. As the code is written, safety of boiler drums rests primarily on X-ray examination of the welds. But the most critical welds cannot be examined in this manner. Welds around openings are necessarily made manually. Due to the contour of the vessel, these welds are by far the most difficult to make perfect of any in the vessel. Stress concentrations, thermal inequalities and other critical conditions are more likely to occur at these points than at any other points in the vessel where welding is involved.

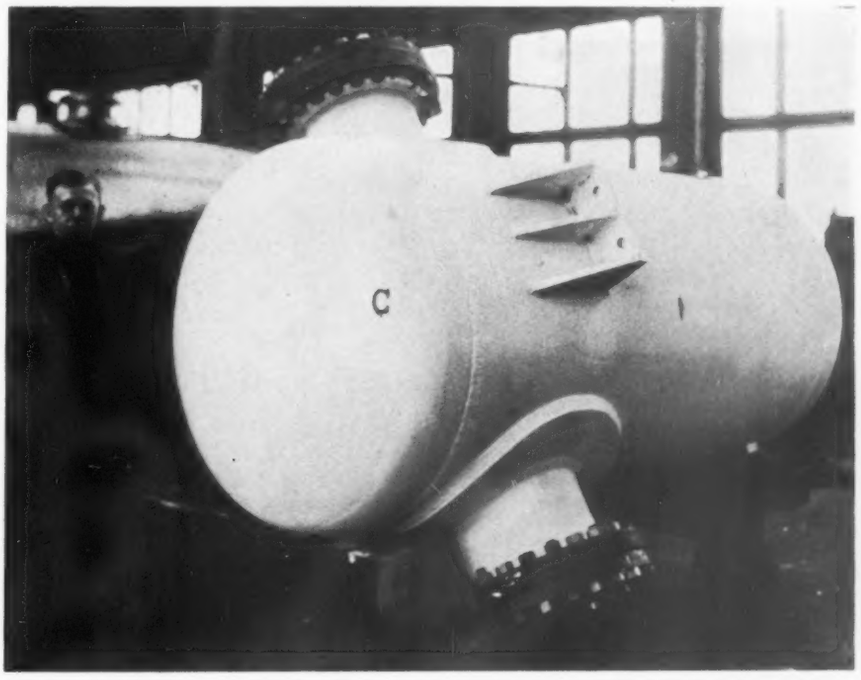
X-Ray All the Welds

Since the higher quality of welded drums is to be justified on the basis of freedom from corrosion fatigue, caustic embrittlement and other difficulties arising from discontinuities such as might occur in a weld, it would appear reasonable to go all the way and X-ray all of the welds to show that such discontinuities in damaging degree do not exist in the vessel. It would seem that the claims for the higher quality would carry considerably more weight with the buyer if this change were made in the code.

The present Class 2 construction appears likely to be changed to include all unfired pressure vessels which are to be fusion welded. The present limitation of plate thickness of 1½ inches seems logical in view of the welding difficulties encountered in thicker plate. It also seems likely that the requirement for thermal stress relieving will be based on whether or not stress concentrations are present in damaging degree as determined by the dried lime wash test, where applicable, rather than by the arbitrary ratio which is the basis of the present code. The dried lime wash test is quite inexpensive and gives a reliable proof of the presence or absence of stress concentrations due either to the welding operation or to improper design. Illustration below shows the test being made on a large welded steam separator.

Stress Relieving Expensive

It is true, of course, that where vessels are made of materials permissible under the code and with modern welding processes, the weld is always stronger than the plate. The purpose, therefore, of determining the degree of stress concentrations is primarily one of determining the useful life of the vessel rather than its immediate safety. Whether the welding procedure is disregarded and reliance is placed on stress relieving by heat deter-



Dried lime wash test made on 48-inch diameter steam separator of 1½-inch welded plate, designed for 600 pounds per square inch pressure

mines to a considerable extent how much the vessels cost.

Stress relieving by heat costs from $20 to $60 per ton, depending on volume of production, size of furnace, methods used and other factors. With an annual production of this class of vessels estimated at 50,000 tons, at an average cost of stress relieving by heat of $30 per ton, industry has to absorb a charge of $1,500,000 for this item of the practice of welding. It seems quite likely that the necessities of the case will bear close examination and that the code may be revised in this respect.

Evidence in the form of large numbers of welded pressure vessels in service which show no signs of premature failure, although they have not been stress relieved by heat, is available and is increasing at a relatively high rate. These vessels were welded under a procedure which minimizes residual strains that are present due to welding.

Class 3 welding under the code appears on the way out for the reason that ductile metal in the weld, such as is required in Class 1 and Class 2, costs less in the long run than the bare wire welding permissible under the code. The inclusion of Class 3 welding in the code was, no doubt, an attempt on the part of the boiler code committee to prevent hardship to manufacturers who have not made the change or who are in process of making it.

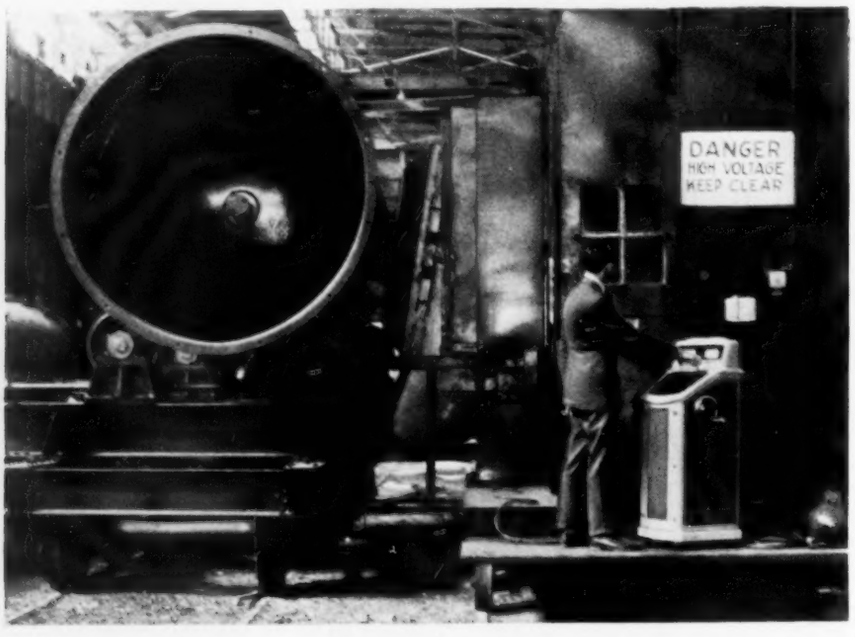
Until such time as the code is refined and adjusted by commercial application, it will afford little satisfaction to the engineer who hopes to dodge responsibility to his financially hard pressed employer by specifying everything "A. S. M. E. Class 1 welding." Adequate inspection and insurance facilities are available to both user and manufacturer so that the safety of welded pressure vessels may be assured.

Convenience and Flexibility Are Features Of New X-Ray Installation

BY MEANS of a co-ordinated system of supporting and rotating vessels to be examined, and of supporting and shifting the X-ray tube, unusual convenience and flexibility are provided in the X-ray installation recently set up in the plant of the Sun Shipbuilding & Dry Dock Co., Chester, Pa., under supervision of the St. John X-Ray Service Corp., New York (STEEL, March 14, page 34).

Shown in operation below, the installation, while it is designed primarily for routine examination of welded seams in pressure vessels according to boiler code requirements, can be used with equal facility for the inspection of castings and other objects. Vessels under inspection are supported on two sets of gear driven rolls, each set mounted on a substantial truck. These trucks are movable along a track to accommodate vessels of different lengths or to clear protruding nozzles and manways. The roll and gear units are movable across the trucks to accommodate vessels of different diameters.

The X-ray generator and tube are mounted on a car movable parallel to the vessel on a second track. The tube is enclosed in a lead-lined box provided with an opening on the side toward the vessel. The box is mounted in trunnions so that it can be tilted readily, and so that the X-ray beam emerging from the window can be directed at any angle between 30 degrees above and below the horizontal. The trunnion frame is movable across the car sufficiently to permit proper approach to a vessel only 2 feet in diameter on the one hand, and proper clearance of nozzles protruding 2 feet from a vessel 12 feet in diameter on the other hand. These motions are accomplished by two handwheels, one controlling the tilt, the other the transverse travel. The X-ray car is moved along its track by a slow-speed electric drive controlled from a portable pushbutton station. The vessel on the tank stands is rotated by a worm gear drive which may be actuated manually or electrically.



Flexibility is provided in this portable X-ray installation by arranging equipment so that the beam may be directed at any angle between 30 degrees above and below horizontal

Shields Are Provided

Suitable auxiliary lead shields between the X-ray box and the outer surface of the vessel are attached to the box itself and adjust themselves to the contour of the surface as the tube is moved into position; similarly, auxiliary shields attached to the film carrier adjust themselves to the contour of the inner surface when the carrier is placed in position. This film carrier is moved along an adjustable rail for longitudinal seams or held by adjustable stops for girth seams, and is removed only when passing from one seam to another. The films themselves are contained in inexpensive holders weighing but a few ounces each, instead of in the usual bulky and heavy cassettes.

Transformers for producing the high-voltage current to excite the X-ray tube and all the high-voltage connections are enclosed within a metal housing on the X-ray car, and with the car itself are grounded thoroughly through the rails. Safety devices prevent entry to the high-voltage enclosure while the current is on.

For the examination of castings and miscellaneous articles a special lead-covered booth is provided near one end of the track for the X-ray car. The entire installation is under a craneway and adjacent to a railway track.

Gear Makers Complete 15 Years' Service to Industry

WITH its annual spring meeting in Cleveland, May 12-13, the American Gear Manufacturers' association marked 15 years of existence and a meritorious service to its industry. Therefore, it was fitting that the opening address of the president, B. F. Waterman, Brown & Sharpe Mfg. Co., Providence, R. I., should review the history and progress of the organization. Looking to the future, he urged members to continue their splendid co-operation.

Keen interest in the commercial aspect of gear manufacture was manifested by discussion of an address "Business Ethics as Affecting Gears," by E. S. Sawtelle, Tool Steel Gear & Pinion Co., Cincinnati. The author said, "After studying the balance sheet of gear companies, I believe that we can safely say that healthiness in the balance sheet is almost directly proportional to the way in which reasonable, sane and ethical sales standards are maintained."

The discussion was carried into another session when J. Harper Jackson, Pittsburgh Gear & Machine Co., Pittsburgh, spoke on "Low Pressure Selling." A number of charts were used to emphasize the points in this address.

With the rapid growth of communism in the United States, Harold S. Falk, Falk Corp., Milwaukee, is of the opinion that the maintenance of an adequate peace establishment for national defense is an economic measure of great importance to national welfare, and maintenance of an adequate training program for industry is an economic measure of like importance to industrial welfare.

Lauds Apprentice Training

Mr. Falk is firmly convinced that the institution of apprenticeship has rendered the boys in his organization immune against radical propaganda of all kinds and he firmly believes, he told his listeners, that they would remain immune even if conditions should become much worse than they are, if that were possible. Apprentices and apprentice graduates will play no small part in business recovery, he asserted.

Recommended practice of the association advocates the cutting of single and double-threaded worm gears with a 29-degree thread milling cutter and 3 and 4-thread worms with a cutter of 40-degree included angle. This leaves worms larger than four threads without specific recommendations, according to L. R. Mayo, Brown & Sharpe Mfg. Co., Providence, R. I., who presented a paper dealing with his company's practice in design and use of worm gear hobs. Rules for the selection of the cutter angle, which cover all possible cases, were outlined by Mr. Mayo as follows:

When the angle of thread with axis is 78 degrees or more, 29-degree cutters are used; when angle of thread with axis is 70 to 78 degrees, 40-degree cutters are employed; 65 to 70 degree angle of thread take 45-degree cutters, and when the angle of thread is 65 degrees or less, use 50-degree cutters. Worms mating with wheels of 24 teeth or less should be finished with a cutter of 40 degrees or more included angle to avoid undercutting the wheel. If the angle of worm thread with the axis is 72 degrees or more, make tooth depth equal 0.6866 x axial pitch; if less than 72 degrees, make tooth depth equal 0.6866 x normal circular pitch.

"New Light on the Strength of Gear Teeth," was the subject of an address by A. B. Cox, Coraopolis, Pa., which incited considerable discussion. Outstanding among technical committee reports was a proposed recommended practice for computing allowable tooth loads of metal spur gears, submitted by Prof. Earle Buckingham, Massachusetts Institute of Technology, Cambridge, Mass., chairman of the spur gear committee. Load carrying ability of a pair of spur gears may be limited by either the beam strength of the gear tooth or the surface fatigue limit of the material, the report states. The lowest of these two values in any particular case should be used to establish the load carrying ability of any given pair. The recommendations are a radical departure from present practice and a thorough trial therefore was urged by the committee.

Committees working on various phases of gear design and standardization reported good progress, indicating some interesting developments for the next meeting. A set of gearing inquiry blanks for use in obtaining quotations on gears was submitted by M. T. Schumb, Boston Gear Works Inc., Quincy, Mass. Each sheet is confined to specifications on a particular type of gear including bevel, spiral, helical, herringbone, railway, spur and worm gearing.

New officers elected for the coming year and appointment of a new secretary were announced in STEEL, May 16, page 19.

Testing Materials Society Announces Program for Atlantic City Meeting

A WIDE range of papers, covering important aspects of metals, testing and testing apparatus, will be presented at technical sessions of the thirty-fifth annual meeting of the American Society for Testing Materials in Atlantic City, June 20-24. Several special features have been arranged.

One is a roundtable discussion on the opening day on the subject of "Acquisition of Good Data." With American industry spending millions of dollars annually in research work and the subsequent compilation of data, this subject is becoming increasingly important.

The other feature consists of a symposium of two sessions devoted to steel castings. This symposium is sponsored jointly by the society and the American Foundrymen's association.

The Edgar Marburg lecture, to be presented by Prof. Hugh Stott Taylor, professor of chemistry, Princeton university, Princeton, N. J., will discuss the problem of resistance to corrosion and is expected to deal extensively with such deteriorating agencies as corrosion and wear.

Among papers scheduled in the tentative program are the following:

Monday, June 20

AFTERNOON

Acquisition of Good Data

"Statistical Nature of A. S. T. M. Data," by R. F. Passano.
"Methods of Dealing with Discordant Observations," by E. W. Washburn.
"Criteria for Rejection of Observations," by P. R. Rider.
"Elimination of Systematic Errors," by H. C. Dickinson.
"What Can Statistical Theory Do Now and What Developments Are Necessar to Make it More Useful," by E. F. Huntington.

EVENING

Acquisition of Good Data

"Specifications of Standards of Quality," by N. F. Harriman.
"Inspection Specifications," by G. D. Edwards.
"Need for Quality Control in Sampling Inspection," by H. F. Dodge.

Tuesday, June 21

MORNING

Nomenclature and Testing

"The Electric Strain Meter and Its

Use in Measuring Internal Strains," by R. E. Davis and R. W. Carlson.
"Full-Load Calibration of a 600,000-Pound Testing Machine," by H. F. More, J. C. Othus and G. N. Krouse.
"An Automatic Autographic Extensometer for Use in Tensile Tests of Materials," by R. L. Templin.

Tuesday, June 21

AFTERNOON

Steel Castings Symposium

"General Survey of Steel Castings Industry," by W. C. Hamilton.
"Statistics Covering Steel Castings," by G. P. Rogers.
"General Data on Steel Castings and Their Fields of Application Governed by the Various Physical Properties," by C. E. Williams and C. H. Lorig.
"Purchase Requirements for Steel Castings with Notes on Physical Properties in Test Bars and in Commercial Castings," by R. A. Bull.

EVENING

Steel Castings Symposium

"Development of Alloy Steels for Castings":
"Representative Properties of Cast Medium Pearlitic Steels," by Fred Grotts.
"Iron - Chromium, Iron - Chromium-Nickel and Related Alloys," by Jerome Strauss.
"Austenitic Manganese Steel Castings," by J. H. Hall.
"Problems and Practices in the Heat Treatment of Steel Castings," by A. W. Lorenz.
"Fusion Welding as Related to Steel Castings," by T. S. Quinn.
"General Principles of Design as Related to Physical Properties, Soundness and Ease of Production," by F. A. Lorenz Jr.

Wednesday, June 22

MORNING

Steel, Magnetic

"Testing of Wire and Wire Rope," by A. V. de Forest and L. W. Hopkins.
"A Comparison of Methods of Determining the Efficiency of Deoxidation in Steel with Special Reference to Zirconium as a Deoxidizing Agent," by H. L. Coles and J. R. Withrow.
"A Correlation of Some Mechanical and Magnetic Properties of 1.21 Per Cent Carbon Tool Steel," by J. V. Emmons and R. L. Sanford.
"Specifications for the Gage of Sheet Metals in Terms of Quality Control," by R. L. Peek Jr.

AFTERNOON

Edgar Marburg Lecture

"Fundamentals in the Problem of Resistance to Deterioration," by Prof. Hugh Stott Taylor.

Thursday, June 23

MORNING

Wrought Iron, Cast Iron, Effect of Temperature on Metals

"Mechanism of Deformation in Gray Iron," by J. W. Bolton.
"An Extensometer for Tension Tests at High Temperatures," by P. G. McVetty.

EVENING

Corrosion and Fatigue of Metals

"Embrittlement of Hot Galvanized Structural Steel," by Samuel Epstein.
"Controlled Data from an Immersion Test," by R. F. Passano.
"Some Factors Affecting the Preece Test for Zinc Coatings," by H. H. Walkup and E. C. Groesbeck.
"Effect of Zinc Coatings on the Endurance Properties of Steel," by W. H. Swanger and R. D. France.
"Fatigue of Shafts Having Keyways," by R. E. Peterson.
"Fatigue Failure Under Repeated Compression," by H. R. Thomas and J. G. Lowther.

Friday, June 24

AFTERNOON

Nonferrous Metals, Metallography

"Mechanical Properties of White Metal Bearing Alloys at Different Temperatures," by H. K. Herschman and J. L. Basil.

Providing Flexibility in Plant Gas Demands

(*Concluded from Page 30*)

no gas holder for storage. The gas is pumped direct to consuming units as soon as produced and passed through the by-product recovery apparatus. A 12,000 cubic foot gasometer on the inlet side of the surplus gas booster maintains a uniform pressure on the coke oven gas used at the batteries for underfiring.

By heating the coke ovens with blast furnace gas and thereby liberating coke oven gas for mill use, the company was able to replace relatively expensive fuels such as producer gas, fuel oil or natural gas in heat treating and heating processes. The investment cost of piping blast furnace gas to the coke ovens and the released coke oven gas to the finishing mills was considerably less than the cost of piping blast furnace gas to the finishing mills for mixing with coke oven gas.

Bank Blast Furnace

During the last year the practice of banking a blast furnace during a weekend or other period has been developed. This new phase of plant operation has worked out smoothly with the dual system of coke oven underfiring. With a furnace out for periods of 12 to 48 hours, the demand for coke is reduced so that the first effect at the coke plant is curtailment of production. The reduction in coke pushed was accompanied by a loss in surplus gas production, although the mill demand for coke oven gas is not necessarily reduced accordingly.

This possible shortage of coke oven gas was taken care of immediately by placing sufficient ovens on blast furnace gas firing to bolster the surplus coke oven gas production to the required quantity. Since this practice has developed, coke plant pushing schedules have been changed from 14-hour to 24-hour coke, subsequently being shortened to 20-hour due to change in coke demand. During these changes in coke production schedules, finishing mill operations have been maintained without delays where coke oven gas is utilized as fuel.

Another interesting feature of this operation is that the period of blast furnace shut-down during a weekend usually is identical with the period of low demand for coke oven gas, so that when no blast furnace gas is available for underfiring, coke oven gas can be used without causing a shortage of coke oven gas for distribution. This is ideal from an economic standpoint, as during the period of low demand for coke oven gas, the production of coke oven gas is kept at a minimum.

Chromium Plate Proving Popular for Tableware

Chromium plated tableware, which is stainless and does not tarnish, is growing in popularity in the United States, according to Henry Weitze, president, Carlton Plating Co., New York. This is a comparatively recent development, but one which has gained impetus with the perfection of improved and economical plating methods by Dr. Colin G. Fink of Columbia university. As a result, cost of chromium plated tableware is lower.

This ware has a luster which is permanent and does not require the use of polishes. It is stainless and can be used for eggs, mustard, vinegar and other foods harmful to many metals. Chromium forms one of the hardest metal surfaces known and is ideally adapted for use for knives, forks and spoons, as well as flatware. It does not scratch as do the softer plating metals.

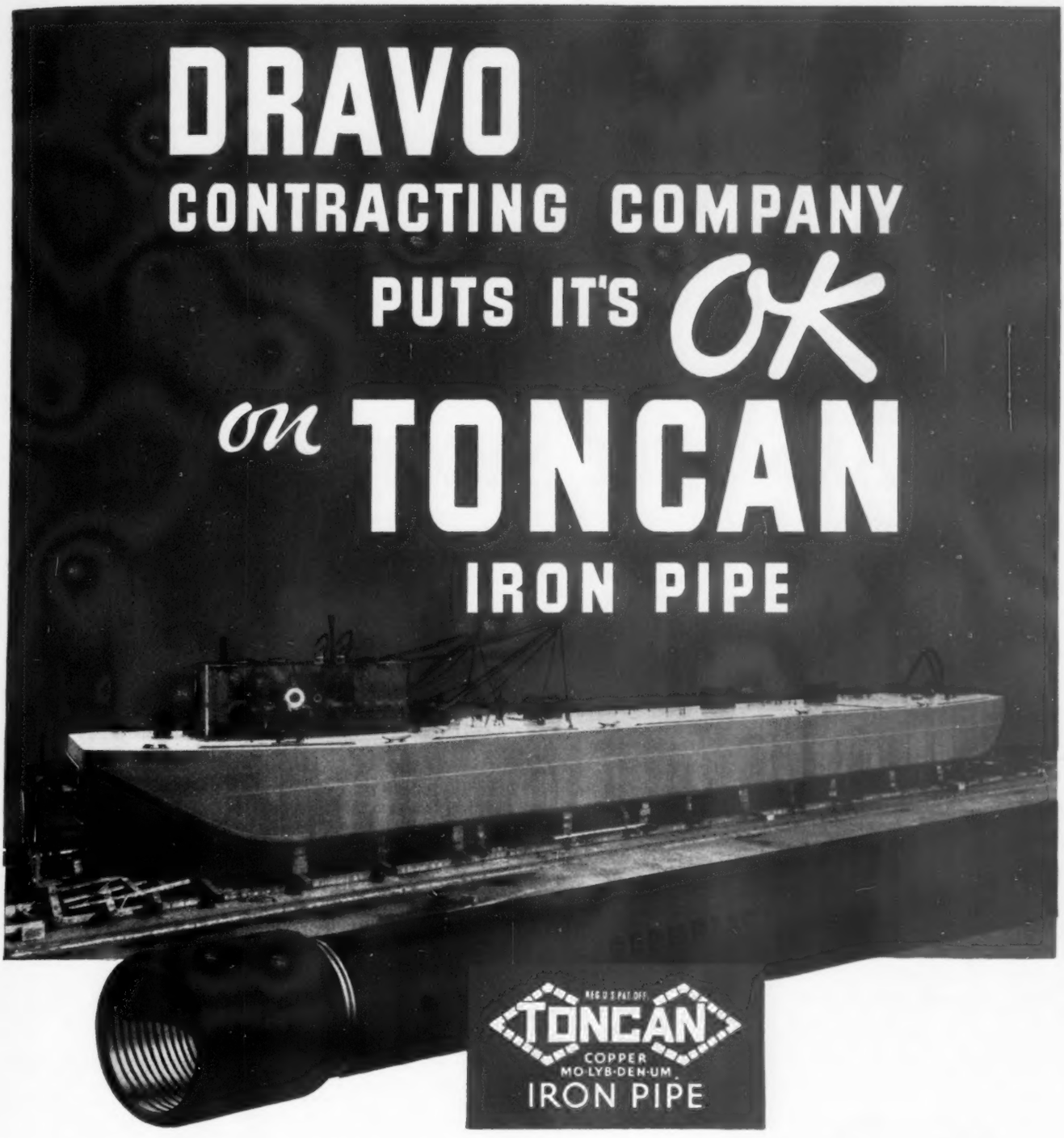
A further unique property of chromium states Mr. Weitze, is that it does not have a strong surface adhesion to water and other liquids as do most other metals, and for that reason water rolls off without sticking. The surface washed with hot water dries without wiping.

British Foundrymen Plan Annual Conference

The Institute of British Foundrymen will hold its twenty-ninth annual conference in Newcastle-Upon-Tyne, June 7-10. On this occasion, Victor Stobie, Stobie Steel Co. Ltd., Dunston-Upon-Tyne, will be installed as the new president.

Papers to be presented at the technical sessions are as follows: "Some Notes on Molding and Pouring Practice," French exchange paper by J. Pillon; "Quantity production of Gray Iron Castings," by J. O'Sullivan; "Hardening Cast Iron—Hardened and Tempered and Nitrogen-Hardened Cast Iron," by J. E. Hurst; "High-Test Cast Iron Developments in the United States," American exchange paper by R. S. MacPherran; "Distortion and Camber in Castings," by F. Longden; "Ferrous and Nonferrous Metals in the Foundry," by W. Rosenhain; "Some Lifting Considerations in a Jobbing Steel Foundry," by F. J. Hemming; "A Resume of the Work of the Malleable Iron Subcommittee of the Institute's Technical Committee."

DRAVO CONTRACTING COMPANY PUTS IT'S *OK* on TONCAN IRON PIPE



The illustration shows a 10,000 barrel capacity oil barge of standardized design built by Dravo Contracting Company, Pittsburgh, Pa. The hull is 175 feet long, 40 feet wide and eleven feet six inches deep. These barges are designed for seaboard and harbor service, transporting fuel oil, refined oil or gasoline from refineries to consuming ports.

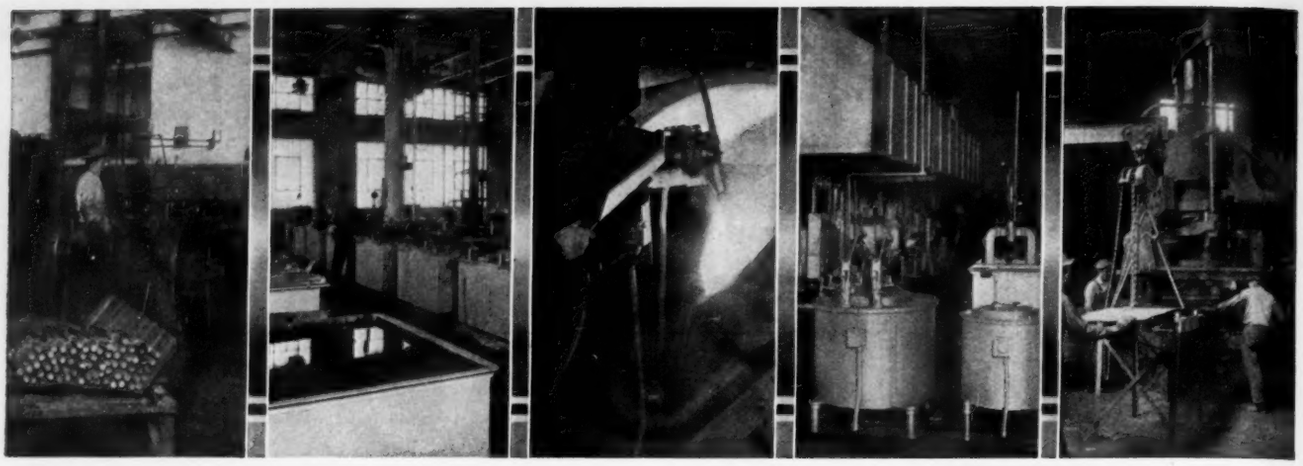
Toncan Iron pipe is used in 4, 6 and 8-inch sizes for cargo piping, extending the full length of the barge. Extra heavy Toncan Iron 2-inch Pipe is used for steam smothering and fire prevention lines. All cargo heating coils are also of Toncan.

Toncan Iron Pipe was selected after a thorough investigation proved the high rust resistance of this alloy of refined iron, copper and molybdenum in service where the combined action of moisture, salt and sulphur would quickly play havoc with ordinary ferrous pipe.

It will pay you to investigate the merits of Toncan Iron. Write for the 64-page book, "Pipe for Permanence."

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO



MAKING THE MOST OF STEEL

CONSIDERABLE saving is effected in the manufacture of certain rustless steel articles by use of a thin section of the chromium material in combination with plain carbon steel of heavier gage. This is possible in instances where use of the bright metal is desirable for decorative purposes. Hub caps on some automobiles, for example, formerly were too expensive when made of rustless steel of sufficient thickness to prevent being dented easily; by stamping a thin section over a thicker cap of plain steel, a stronger piece of equal attractiveness is produced at lower cost. On some new car models rustless steel is wrapped about the door handles and spanner bars, providing a rust-proof piece at a cost well below that of a similar article made of solid chromium steel. This, of course, is not to be confused with veneered metal which is a solid laminated piece of chromium and carbon steel. In making the new parts there is no bond between the two metals, the one is merely fastened over the other.

QUALIFYING welders and making routine inspection tests in the field has been simplified by development of the portable tensile testing machine. With this machine accurate and quantitative data are available a few minutes after the test piece has been cut from the finished weld. Many pipeline companies are providing their inspectors' cars with this testing equipment as well as with cutting and welding apparatus. By means of the cutting blowpipe, the inspector cuts coupons at random from finished welds; the prepared coupon then is tested; and if the weld is satisfactory, the inspector welds a patch back into the joint where the coupon was cut out.

$ $ $

For use in pickling moderate-sized forgings, a progressive drop forge plant recently designed a new type of basket incorporating a drop bottom for quick unloading. This basket is fabricated from bars and small structural shapes of corrosion-resisting metal and has large openings for free acid circulation.

$ $ $

A large manufacturer of electric refrigerators mounts the flat steel sections of its box on specially-designed heat-resisting alloy fixtures to insure that the sheets remain flat during the enamel baking process. The light weight of the fixtures contributes to power economy in the electric furnaces and the nonscaling feature of the alloy assists to keep the enamel clean. The fixtures have long life which results in low maintenance cost.

$ $ $

An industrial plant which had an oil circulating system was troubled with sludge accumulating constantly, necessitating the frequent renewal of tubes. A solution was found by installing low-temperature strip heaters adjacent to the oil line. Sludge and carbonization were stopped at once and the cost of heating proved lower than with the previous system.

$ $ $

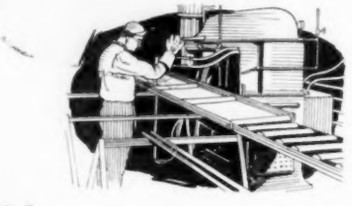
A power company had been in the habit of buying regularly 41 types of steel outlet boxes and because of the range, the number of boxes per order was relatively small. The company standardized on 6 types, a reduction of 85 per cent, and by purchasing larger quantities of each type was able to effect a net saving in cost amounting to 25 per cent.

$ $ $

For handling hot work coming out of its heat treating furnaces, a Detroit automobile manufacturer employs trays with short legs, and when the work is withdrawn, the trays are carried to the quenching tank by means of an overhead monorail. These trays can be stacked one above the other and are moved about with high-lift trucks.

$ $ $

A central Pennsylvania producer of steel castings and forgings has effected an appreciable economy by the elimination of overhead crane cages. The cranes are now operated from pulpits located at floor level, thereby permitting crane operators to perform additional work.



USING an electronic tube, a manufacturer of electric control equipment has developed a new timing device for spot, projection and other types of resistance welders. The device makes possible an accuracy of better than a fraction of a second and has an adjustable range up to 16 seconds. With its use unskilled operators can produce successful welds, thereby practically eliminating rejects and throwouts. Vibration, severe or intermittent service do not affect the accuracy of control.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Brittleness

Factors affecting brittleness of zinc coated steel, by J. S. Adelson, in Blast Furnace and Steel Plant, May 1932, *p.* 430, 3½ *pp.*, 3 *illusts.*

Brittleness which makes its appearance in steel under certain conditions is influenced by the following factors: Presence of a coating of zinc; amount of cold working in the steel; heating the steel to the so-called critical temperature (750-950 degrees Fahr.) during or subsequent to the application of the zinc; prolonged heating cycle; strain in the steel during the heating period; and heterogeneity of the steel.

To minimize this embrittlement precautions should be taken during processes of manufacture and during the service life of the material to eliminate adverse effects resulting from the above factors. Although hot dip critical temperature range, sherardizcritical temperature range,, sherardizing temperatures should be maintained outside this range. Work to date has proved that brittleness in zinc coated steel is generally the result of a combination of factors and that any one alone is not of sufficient magnitude to result in fracture. Considerable further investigation of the subject remains to be done.

—STEEL, 5-23-32

Automotive Steel

Normalized steel for forged crankshafts, in Vancoram Review, April 1932, *p.* 51, 4 *pp.*, 1 *illust.*

For many years normalized steel has been used for locomotive and similar forgings of large size in which high strength and dynamic properties are required and for which quenching and tempering operations were either not effective on account of mass or not permitted due to residual quenching stresses. Recently the development of complicated automotive crankshaft forgings has led to greatly increased difficulties in manufacture and in service, resultant from heat treatment stress and distortion; and it appeared that the normalizing practice could be applied advantageously here to overcome troubles of related character.

Careful examination and practical trial of a large number of variations of composition, and study of their behavior in the presence of manufacturing variables. has resulted in a new and greatly improved steel, known as normalloy. Typical analysis is :Carbon 0.40; silicon 0.20; manganese 1.20; chromium 0.35; and vanadium 0.10 per cent. Typical physical test values are: Yield point 70,000 pounds per square inch; tensile strength 109,700 pounds per square inch; elongation in 2 inches 20.0 per cent; reduction in area 53.0 per cent; and brinell hardness 221.

—STEEL, 5-23-32

Ore to Steel

Ores reduced to steels in hollow-electrode furnace, by T. Holland Nelson, in Iron Age, May 12, 1932, *p.* 1066, 3 *pp.*, 4 *illusts.*

Passing finely divided ores intimately mixed with reducing materials through hollow electrodes is the principle of the operation of the Wiles hollow-electrode furnace. High-grade plain carbon and alloy steels are produced by the chemical reactions in the electrodes, according to the author. In the furnace are two hollow side electrodes placed in a substantially horizontal position. When an arc is struck between the electrodes they become heated over a considerable portion of their length on a gradually declining heat gradient away from the arc. As ore and reducing agent pass through the electrodes and emerge into the arc the ore is reduced to metal and slag which fall to the bottom of the furnace from which they can be tapped. Particular attention is called to the unusual character of the metal produced and to the effect of the intimate contact of the raw materials during the reduction at high temperatures. Patents as well as the furnace are owned and controlled by the Buffalo Electric Furnace Corp., Buffalo.

—STEEL, 5-23-32

Welding

Flexibility of welding combines strength and lightness, by Everett Chapman, in Machine Design, May 1932, *p.* 42, 4 *pp.*, 6 *illusts.*

It is possible today to fuse two pieces of steel together with weld metal which as deposited has the following characteristics: Tensile strength, 65,000 pounds per square inch; a ductility corresponding to an elongation in 2 inches of 30 per cent; and an endurance or fatigue limit of 24,000 pounds per square inch.

This fact carries to the engineering profession one of the most momentous challenges it has ever had to meet. This challenge will require us to recall what we know of the proper placing of materials to meet given load conditions; it will ask us what we know of factors of safety and why are they as large as they are; and it will ask us to scrutinize carefully the equations we use so faithfully, the results of which are cautiously multiplied by five or six.

—STEEL, 5-23-32

Steel Cleanliness

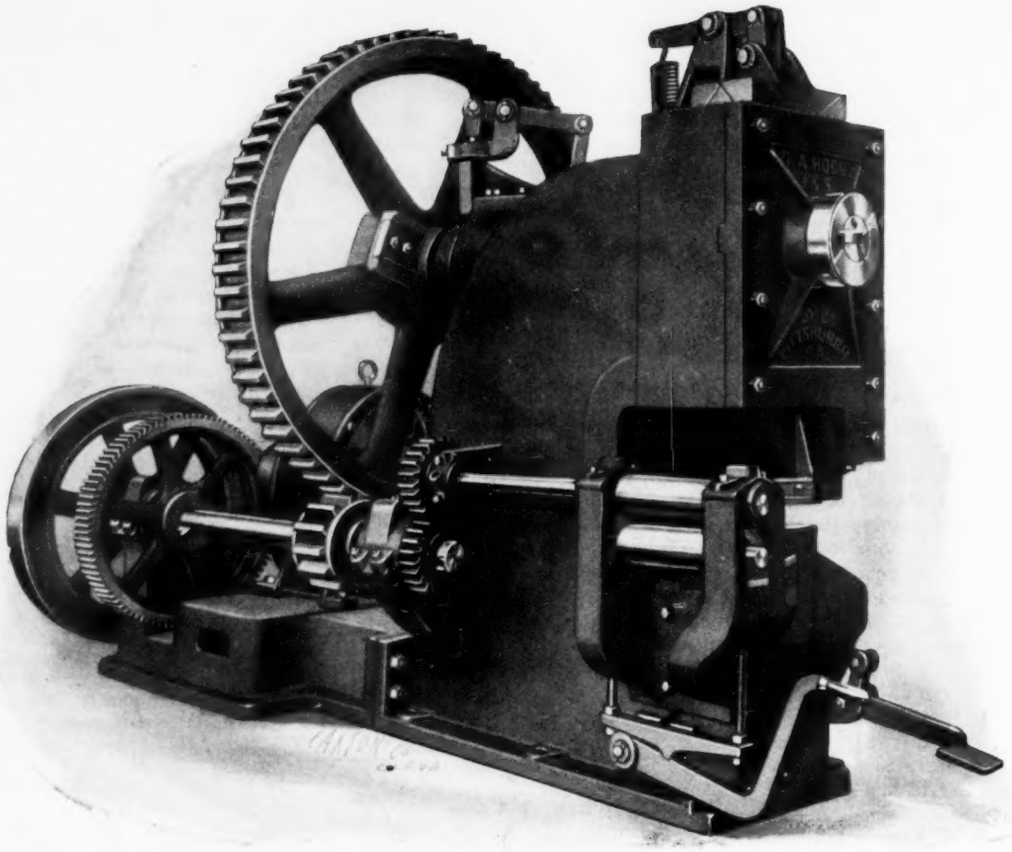
Some factors affecting the cleanliness of steel castings, by C. H. Herty Jr., C. F. Christopher and M. W. Lightner, a paper presented at the annual meeting of the American Foundrymen's association in Detroit, May 2-5, 14 *pp.*, 2 *illusts.*, 3 *tables.*

In producing steel of uniform cleanliness and good physical properties it is necessary to be careful not only of the choice of deoxidizers but also of the preparation of the heat for deoxidation. A good action in the bath during the refining period and a slag of the proper viscosity, in either basic or acid practice, are necessary for proper preparation of the bath for deoxidizing additions. Methods of controlling bath action and slag viscosity are presented in detail.

The action of deoxidizers is to form an insoluble oxide which must be floated out of the metal. The rate of elimination of nonmetallic particles depends on their size and this, in turn, is determined by the deoxidizers added. Manganese-silicon alloys form larger inclusions than any combination of deoxidizers studied at this time. The action of aluminum in causing low ductility is the change in the location of sulphide inclusions in the cast steel. A low-sulphur steel would appear to be necessary for consistent production of high ductility in aluminum treated steels.

—STEEL, 5-23-32

"NATIONAL" ROLL



STANDARD SHEET BAR SHEAR WITH PINCH ROLLS
MOTOR BELT OR ENGINE DRIVEN

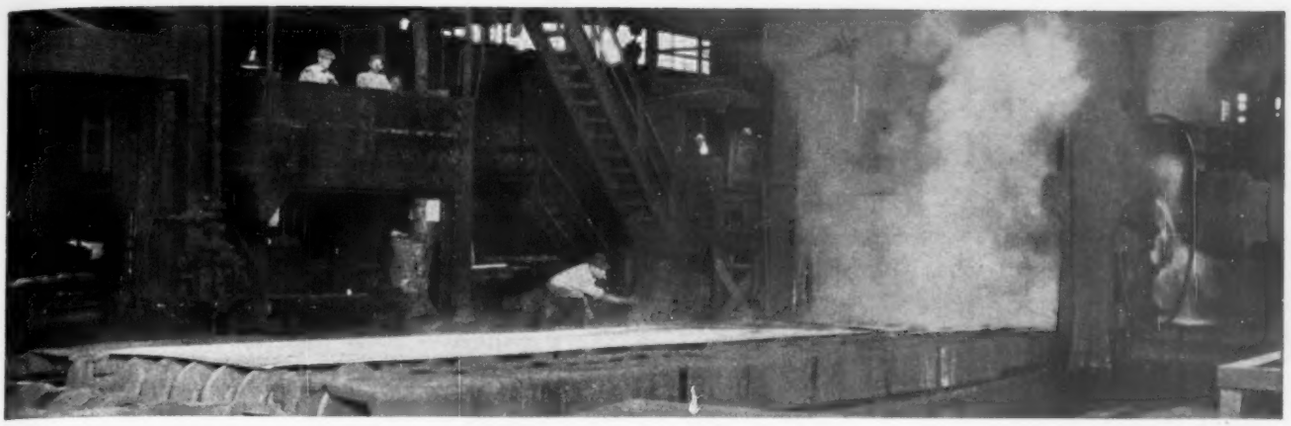
ROLLING MILL MACHINERY

PLAIN CHILLED ROLLS
SPECIAL CHILLED ROLLS
COLD ROLLS
SAND ROLLS

ROLLS

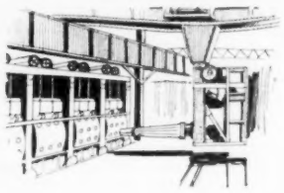
EXTRA HARD ROLLS
FOR
BRASS
COPPER
ALUMINUM

THE NATIONAL ROLL & FOUNDRY COMPANY
Office and Works: AVONMORE, PA., U. S. A.



PROGRESS IN STEELMAKING

RECENT tests disclose that unburned magnesite brick afford economic service in open-hearth sidewalls and on account of their resistance to spalling can be used for downtakes of checkers and front and backwall construction where the brick are not covered with dolomite or grain magnesite.



MAINTAINING second and third cut blooms at rolling temperature while the forward section is being rolled is accomplished at a new mill in the Chicago district by charging them into a holding furnace installed adjacent to the roller table leading to the roughing mill.

♦ ♦ ♦

Installation of a platform between two blowing engines serving a stack in the Pittsburgh district has effected a one-man control and an estimated saving of $5000 annually.

♦ ♦ ♦

Three pack shears serving a plant in the Detroit district are handling the ouput of 10 hot sheet mills. Each pack shear in reality is a group of four shears, two for trimming the sides simultaneously and two for trimming the ends. Each pack is conveyed lengthwise into the side-cutting shears and when the proper position between the knives is reached, the conveyor automatically stops. The shears are actuated automatically and trim both sides of the pack simultaneously. The conveyor then carries the pack forward to the end-cutting shears. An electric switch located on the shear bed controls the amount of steel that is trimmed from the front end of the pack. After the front end has been sheared, the switch remains disengaged while the pack is being conveyed to the back gage. Here an electric contact brings the conveyor to rest and causes the shear to trim off the rear end of the pack. Meanwhile, another pack enters the side-cutting shears. Thus the process not only is continuous but affords increased production and a substantial decrease in labor costs.

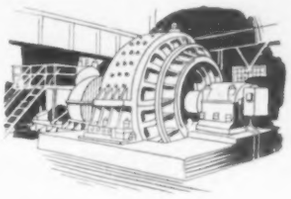
♦ ♦ ♦

Cost of chipping high-carbon axle steels ranging from 0.08 to 0.10 per cent silicon, according to tests conducted by the bureau of mines experiment station, Pittsburgh, is about 60 cents a ton compared with $1 a ton for steels containing 0.15 to 0.20 per cent silicon.

♦ ♦ ♦

Jarring machines now are employed by a steelmaker in the Youngstown district for agitating ingot molds while the steel is solidifying. The shaking action, it is claimed, causes a large part of the gas to be ejected from the mold, thus minimizing the gas holes which otherwise would form near the outer surface of the ingot.

ABOUT 60 per cent of the surface is placed in the first pass of bent-tube boilers fired with blast furnace gas or stokers by the installation of improved-type baffles with curved instead of square corners. The curved units promote an increasing velocity as the gases cool, reduce the draft loss, prevent the formation of eddy currents, facilitate cleaning of the boiler, provide smoother passage for the gas and eliminate dead gas pockets.



BEHAVIOR of rolling mill drives when subjected to violent and sudden load changes now are being studied by the stroboscope, a recently improved scientific device which makes it possible to see and to record by stop motion photography just what hapepns in the motor under operating conditions. A feature of the device is the electrical circuit which causes a condenser to discharge periodically through a thyratron mercury arc tube. Photographic exposures are made at ten millionths of a second. The instrument also is to be used for studying the behavior of cams, springs, valves, generators and other parts and prime movers in steel mill operating departments.

♦ ♦ ♦

High ductility of weld metal, increase tensile strength and greater resistance to corrosion is afforded by the introduction of a heavily-coated electrode for welding within the shielded arc on mild steel. High welding current is required. The new electrode allows welding speeds two to four times greater than those of the bare or lightly-coated types.

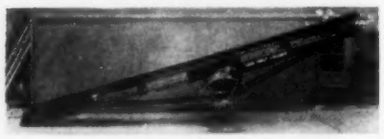
New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

Announces Portable Flight Conveyor Unit

Link-Belt Co., 2045 West Huntington Park avenue, Philadelphia, has brought out a bituminous type portable flight conveyor for handling coal, coke and other lumpy materials as well as fines. The unit, shown in the accompanying illustration, has a capacity of 90 tons of material an hour in the 26 and 31-foot sizes. The 21-foot machine will handle 60 tons an hour.

Steel angles, channels and heavy plates, hot riveted, make up the frame. The carrier employs two strands of malleable iron and steel combination chain to which flights are fastened every 15¾ inches. The chain



Link-Belt portable flight conveyor for coal, coke, etc.

speed is 126 feet per minute and the flights are cupped to pick up the material.

The power hoisting mechanism consists of a conveyor boom that can be raised or lowered by power from the motor. Minimum discharge height of conveyors above the ground line is 8 feet. Maximum discharge heights are 14, 17½, and 20½ feet for the 21, 26 and 31-foot units, respectively.

◆

Adds New Sizes to Line of Milling Machines

Kearney & Trecker Corp., Milwaukee, recently added No. 3 and 4 size machines to its line of new style knee type milling machines. The units now are available in four sizes, designated No. 1, 2, 3, and 4, each of which is built in the universal, plain, and manufacturing horizontal types, and in the plain and manufacturing sliding head vertical types. No. 3 is shown in the illustration herewith.

Outstanding features include a greatly increased range of spindle speeds from 12 to 1200 revolutions per minute; feeds from ¼ to 60 inches per minute; a new center-bearing spindle with worm drive; a sponson type knee; and a multiple V-belt drive with motor set at right angles to the spindle.

The 100 to 1 speed range permits surface speeds in either direction as low as 50 feet per minute for a 12½-inch diameter cutter, and as high as 100 feet per minute with a ¼-inch cutter. This broad range makes possible better performance with high-speed steel cutters, as well as permitting full use of the advantages offered by tungsten and tantalum carbide cutters.

◆

Develops Electrode for Welding Aluminun

Lincoln Electric Co., Cleveland, recently announced the development of an electrode for welding aluminum. The new product is a 5 per cent silicon aluminum alloy and can be used for welding sheet or cast aluminum. It is designed for either metallic or carbon arc welding.

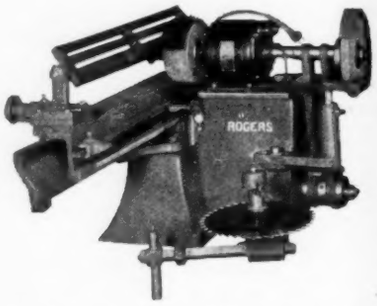
The electrode is provided with a coating which prevents excessive oxidation and will dissolve any aluminum oxide that might be formed. According to the manufacturer the coating assists in giving extremely smooth operating arc which is particularly essential in welding aluminum. Resulting weld is dense without porosity and possesses high tensile strength.

The electrode is made in four sizes, 3/32-inch, ⅛-inch, 5/32 and 3/16-inch in 14-inch lengths.

◆

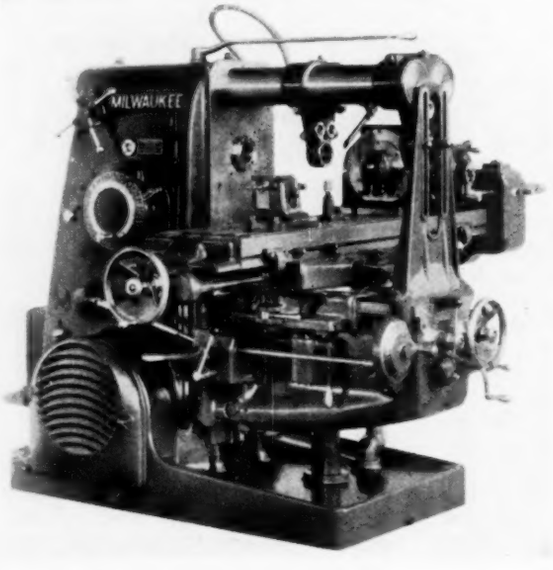
Introduces Electric Utility Grinding Unit

Samuel C. Rogers & Co., 191-205 Dutton avenue, Buffalo, has placed on the market a combination bench grinder designed particularly for

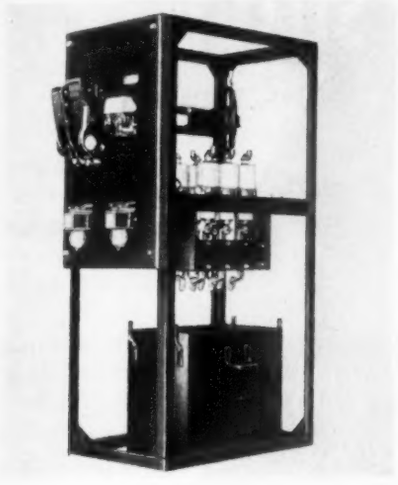


Rogers electric utility grinder designated Type K

plants requiring an efficient yet inexpensive machine. It is equipped with a table for face or surface grinding, knife or die grinding. A tool rest also is provided for edge tool grinding and an attachment permits sharpening circular saws up

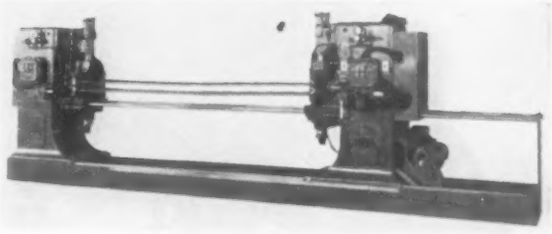


IN THE adjacent illustration is shown the new No. 3 Universal milling machine developed by Kearney & Trecker. This new size and a No. 4 model have been added recently to the company's line. The two new sizes are equipped with a 14-inch swing hypoid bevel gear dividing head



(Left) — Allen - Bradley starting switch for 2200-volt induction motors

(Right) — Thomson-Gibb electric heating machine



to 22 inches in diameter. On special order the unit comes furnished with a 10-inch disk grinding wheel with an adjustable table.

◆

Rounded Belting Specially Constructed

J. E. Rhoades & Sons, 335 North Sixth street, Philadelphia, has added to its line of transmission equipment rounded belting of special construction. This belting is made up of 25 different materials and is furnished in sizes from ⅛ to 9/16-inch and in 1000, 500 and 100-foot lots. Smaller orders may be placed.

◆

Oil Switch Is Operated Magnetically

Allen-Bradley Co., 1311 South First street, Milwaukee, has developed a 3-pole magnetically-operated oil switch for the starting of standard squirrel cage and high-reactance squirrel cage motors of ratings up to 750 horsepower, 2500 volts. These units, designated, bulletin 726, and shown in the accompanying illustration, also may be used as primary switches in connection with slip-ring motors having a 2500-volt primary and rated up to 750 horsepower. They are furnished for all standard frequencies from 25 to 60 cycles.

The switch is operated by closing the contacts of a pushbutton, float switch or other pilot control device. Close and reliable overload protection is afforded by two combination magnetic-inducto-therm relays, adjustable for current tripping values. The oil switch has ample reserve switching capacity, and the oil tank is completely welded. An electrical interlock makes it necessary to have the oil tank properly in place before the starter can be operated.

◆

Split-Phase Motors Are Vibrationless

Wagner Electric Corp., 6391 Plymouth avenue, St. Louis, has developed two new split-phase motors, completely redesigned for ultra-quiet, vibrationless and cool operation. New features of those motors include: Drip-proof endplates, liberal wool-yarn lubrication, handy conduit box adjustable in four positions, and redesigned switching mechanism on the type 44RB. This type, shown herewith, is available in 1/30 and 1/20 horsepower, and type 56 RB in ⅛, 1/6 and ¼ horsepower. Both types are available at 1725 and 1140 revolutions per minute in all cycles.

Wagner split-phase electric motor, type 44RB

◆

Unit Heats by Electrical Resistance Method

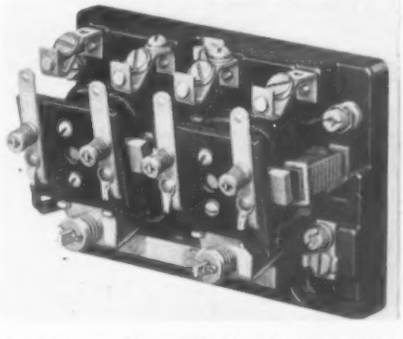
Thomson-Gibb Electric Welding Co., Bay City, Mich., recently introduced an electric heating machine. The unit, shown in the accompanying illustration, is a special application of direct-controlled heating by electric resistance method, and was developed for rapid soldering of parts consisting of from three to twelve copper tubes on which are assembled a large number of flanged fins, each of which must be thoroughly soldered to each tube for good thermal contact. The tubes are covered with solder, the fins assembled, soldering acid applied, the complete unit clamped in machine, current turned on, and in less than a minute, or more, depending on number of tubes and their length, the entire assembly is thoroughly soldered.

This method of direct-controlled heating by electrical resistance has applications to many similar classes of work besides soldering, such as heating for annealing, heat treating, heating for forging, bending, etc.

◆

Reversing Contactor Has Small Dimensions

Industrial Controller division, Square D Co., Milwaukee, recently announced a new alternating-current reversing contactor of small dimensions adapted particularly to small hoist, window and door control. These units, designated class 8711, type K, are mounted on a porcelain base, are mechanically interlocked, and have silver contacts. Maximum rating is ¾ horsepower, single or three phase. Dimensions of the contactor, shown herewith, are only 6 inches wide, 4 inches high and 3¼ inches deep.



A. C. reversing contactor developed by the Square D Co.

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Shapes Help Maintain Steel Rate

Important Projects Mature, With Auto Needs Still Expanding—Raw Material Prices Sag, Become a Menace — Operations May Ease This Week

STRUCTURAL steel requirements have expanded measurably, both in orders and active inquiry, lending needed reinforcement to the automobile industry in its almost single-handed support of the steel markets.

Including 12,000 tons for Long Island railroad grade crossing eliminations, last week's structural awards totaled 20,623 tons, largest since late March. Its loan from the Reconstruction Finance Corp. will enable the Pennsylvania railroad to release about 50,000 tons for its eastern electrification.

Over 10,000 tons for various projects should be placed this week in the New York district. Three federal projects, up for bids at Washington in June, call for 35,000 tons. The largest river barge award in months at Pittsburgh is for 12, requiring 2200 to 2400 tons of plates and shapes.

In the aggregate, steel needs of the automobile industry continue to gain. This is largely due to Ford, expected to close this week on material for a June schedule which will be substantially larger than the May one. Detroit and northern Ohio mills thus far have been the chief beneficiary of Ford business; other districts may now share it.

Chevrolet probably will curtail somewhat in June. Some automobile manufacturers will build up stocks next month in anticipation of a midsummer shutdown. June certainly will develop the heaviest automobile production—and steel consumption—in nine months; what July does depends on Ford.

The price situation commands greater attention. Barring some weakness in narrow hot-rolled strip, finished steel prices have been rather well stabilized. There has been an undercurrent that sheets might be advanced several dollars a ton for the third quarter, and perhaps heavy finished steel one.

But weakness in raw materials is persistent, and may become a threat. Pig iron at Pittsburgh and Youngstown is off 50 cents. Scrap also is weaker at Pittsburgh and Chicago, though more steady at Buffalo and Detroit. By-product coke is off 50 cents at Chicago; Connellsville foundry coke is 25 cents easier. Warehouses at Detroit have revised cold-finished prices, imposing quantity extras.

As a result of these adjustments, the iron and steel composite of STEEL is off 6 cents to $29.58 and the scrap composite 21 cents to $6.92. Meanwhile, the finished steel composite is unchanged at $47.62.

Due largely to automotive specifications, Cleveland district mills expanded their operations six points last week to 38 per cent. A rise of eight points at Buffalo more than offset a slight decline at Pittsburgh, giving last week a steel rate of 25½ per cent, the highest since the week ended March 12. Buffalo mills will retrench this week, while Pittsburgh may come back, indicating little change but a possible slight recession.

Miscellaneous demand for pig iron and finished steel products is little changed. Chicago expects pig iron shipments in May to exceed April, and notes slight gains in some steel lines. Better strip and sheet orders are reported at Pittsburgh.

Wheeling & Lake Erie railroad is expected to place 50 cars of a special type with an Ohio carbuilder shortly. Track fastening orders at Chicago the past week approximated 3000 tons. Western roads are taking a little more steel for track maintenance work.

Continuing its diligence in invoking dumping proceedings, the American Iron and Steel institute is expected shortly to ask an investigation of imports of bars, shapes and other products. It already has proposed action on hoops.

Composite Market Averages

	May 21	May 14	One Month Ago April, 1932	Three Month Ago Feb., 1932	One Year Ago May, 1931	Ten Years Ago May, 1922
Iron and Steel Composite	$29.58	$29.64	$29.75	$29.56	$31.37	$36.49
Finished Steel Composite	47.62	47.62	47.62	46.72	49.02	52.39
Steelworks Scrap Composite	6.92	7.13	7.76	7.89	10.12	14.67

Iron and Steel Composite:—Pig iron billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	May 21, 1932	April, 1932	Feb., 1932	May, 1931
PIG IRON				
Bessemer, del., Pittsburgh	$15.76	16.76	16.96	18.26
Basic, valley	15.00	15.00	15.00	17.00
Basic, eastern del., eastern Pa.	15.00	15.00	15.75	17.00
No. 2 foundry, del. Pittsburgh	15.76	16.26	16.76	18.26
No. 2 foundry, Chicago	15.50	16.00	16.50	17.50
*Southern No. 2, Birmingham	11.00	11.00	11.20	12.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.26	15.66	15.76	17.76
Malleable, valley	14.50	15.50	15.50	17.00
Malleable, Chicago	15.50	16.00	16.50	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	23.04	27.04
Gray forge, del. Pittsburgh	15.63	16.13	16.33	17.63
Ferromanganese, del. Pittsburgh	80.24	80.24	80.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville, furnace, ovens	2.15	2.25	2.25	2.45
Connellsville foundry, ovens	3.00	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	25.80	29.75
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.75
Billets, open-hearth, Pittsburgh	27.00	27.00	27.00	30.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	May 21, 1932	April, 1932	Feb., 1932	May, 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.50	1.65
Steel bars, Chicago	1.70	1.70	1.60	1.75
Steel bars, Philadelphia	1.91	1.91	1.81	1.94
Iron bars, Chicago	1.65	1.70	1.70	1.80
Shapes, Pittsburgh	1.60	1.60	1.50	1.65
Shapes, Philadelphia	1.75	1.75	1.62	1.76
Shapes, Chicago	1.70	1.70	1.60	1.75
Tank plates, Pittsburgh	1.60	1.60	1.50	1.65
Tank plates, Philadelphia	1.79½	1.79½	1.69½	1.85½
Tank plates, Chicago	1.70	1.70	1.60	1.75
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.15	2.25
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.75	2.80
Sheets, No. 10 blue aneal., Chi.	1.85	1.85	1.90	2.00
†Sheets, No. 24, hot, ann., Chi.	2.35	2.35	2.35	2.40
Sheets, No. 24 galvan., Chi.	3.00	3.00	2.95	2.95
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$9.50	10.20	10.25	11.25
Heavy melting steel, eastern Pa.	6.50	7.20	7.35	9.50
Heavy melting steel, Chicago	6.00	6.55	6.80	8.65
No. 1 wrought, eastern Pa.	7.75	7.95	9.00	11.00
No. 1 wrought, Chicago	5.25	5.85	6.85	8.40
Rails for rolling, Chicago	8.00	8.90	9.85	11.15

Sheets

Sales Improved — Advances for Third Quarter Being Considered —Autobody Seconds Up $5

SHEET PRICES, PAGE 45

Pittsburgh—Sheet sales last week improved noticeably. Gains were not due to any one consuming group, but diversified. There appeared a trend toward ordering slightly more than carload lots. Customers have shown no interest in June or third quarter, although advances in finished sheet prices are being considered. Present levels are fairly firm at 2.20c on black; 2.85c on galvanized; and 1.55c on wide hot-rolled.

New York—Some sheet sellers expect an early announcement of higher prices for third quarter, but others are less hopeful. The market is quiet. Bethlehem Steel Export Corp. has closed on 115 tons of corrugated extra-heavy galvanized sheets for Cavite, P. I., for the navy, at 3.99c, works. American Sheet & Tin Plate Co. has taken 110 tons of black sheets for the navy, both east and west coast yards, at $3619, delivered; Worth Steel Co. booked 28 tons at $1518, delivered. Wheeling Steel Corp. is low on 31 tons of galvanized sheets for the Mare Island, Calif., navy yard at $1884, delivered.

Philadelphia — Sheet buying continues spotty, with opinion in the trade divided regarding prospects for an advance in prices for third quarter.

Youngstown, O.—Broadening of sheet activities to other than automotive lines is creating a more confident feeling among valley producers. One result of the advance in sheet bars has been a stiffening of quotations on all grades of sheets. Eastern Ohio sheet mills are operating without much further aid from automobile partsmakers.

Buffalo—District sheet mills continue operations at about 25 per cent. Lack of larger automotive tonnage makes it improbable that this rate will be increased materially this month. Sellers here report Canadian demand for American sheets for finishing in dominion plants has practically ceased.

Cleveland—Considerable talk of higher prices for sheets for third quarter is heard among producers since it was announced sheet bars will be advanced $2 a ton. Currently, however, there is no change, except that all gages of autobody seconds have been raised $5 per ton to $40, Pittsburgh. Some automotive builders are using special grades not comparable to standard autobody, which hold at 2.80c to 2.90c. The usual price on black is 2.20c, though carryovers at lower figures tend to have a depressing influence. Ford has placed some orders with a Cleveland mill, principally for strip. Three other makers in nearby districts also have benefited from recent Ford orders.

Cincinnati—Sheet mill operations are slightly lower. With one or two exceptions demand from automotive builders is not being sustained.

Chicago—Sheet specifications remain at the dull rate of the preceding several weeks. Refrigerator manufacturers continue slow buyers. Mill operations are irregular, averaging no higher than 25 per cent. Definite announcement regarding a $2 to $3 a ton advance in prices is lacking, although such a move is regarded in prospect. Hot-rolled annealed sheets continue 2.30c, mills, with galvanized 2.95c, base.

St. Louis—Miscellaneous sheet requirements account for a fairly good total. The movement of galvanized sheets to southern rural areas is heavier.

Birmingham, Ala. — The Gadsden sheet mills resumed operations last week for a short time. The market continues quiet.

March immigration fell off 41 per cent from last year, according to the bureau of immigration.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.35c
Chicago, del.	2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.85c
Chicago, del.	2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort.	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.80c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
New York, del.	1.87c
Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.00c
Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.90c
Boston, del.	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c to 1.35c

IRON

Chicago, base	1.65c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.50c
Chi., billet	1.65c to 1.75c
Chi., rail steel	1.55c to 1.60c
Chi., rail steel, road, bridge and culvert	1.55c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland, minimum 10,000 lbs. of a kind and grade	1.70c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon Van.	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo.	0.50	9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6 in., Pitts.	1.60c
Do, 6 1/16 to 24-in., Pitts.	1.50c
Hot strip to 6 in. Chi.	1.60c
Do, 6 1/16 to 24-in.	1.50c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$32.00 to 34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset, 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do. less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Bars

Chicago Mills Feel Mild Gain In Specifications—Higher Price For Third Quarter Hinted

BAR PRICES, PAGE 45

Chicago—Steel bar shipments show mild improvement, and miscellaneous orders also are slightly ahead of the rate of 30 days ago. Releases from some automotive interests account for a portion of the betterment, but specifications from farm implement builders reflect partly an increase in repair work. A mail order producer of farm implements reports sales ahead of the 1931 period and capacity operations. Soft steel bars continue 1.70c, base, Chicago, with rail steel bars 1.50c to 1.60c, Chicago Heights. Rail steel bars continue quiet.

Boston—Midvale Co. has booked 160 tons of hot-rolled grade V round bars for the die lock chain, mostly 1⅛-inch diameter, for delivery at the Charlestown, Mass., navy yard at $13,571.88, delivered.

Philadelphia — Commercial steel bars are quiet and the price is firm at 1.60c, Pittsburgh. Iron bars are steady at 1.60c to 1.65c, Pittsburgh.

Pittsburgh—Although an unverified report of a $1 a ton advance in bars, plates and shapes for third quarter is prevalent, this apparently has not reached further than being considered. In the meantime, specifications are dragging and there has been little support to bar mills from the automotive industry. The 1.60c Pittsburgh base on carbon bars and 2.65c for alloy bars are maintained.

Youngstown, O.—A fair total of steel bar orders continues to come from a variety of widely scattered sources, with the implement, cold-drawn and concrete bar demand supplemented by continued fair orders from automotive builders. Alloy steel bar needs appear confined largely to auto partsmakers. Common steel bars are steady at 1.60c, Pittsburgh, in view of a possible billet price advance for next quarter.

Youngstown Sheet & Tube Co. has been awarded 29 tons mild steel bars, ⅝ x 1 inch and 10 tons, ⅜ x 1¼-inch at 1.85c, delivered, quartermaster depot, Jeffersonville, Ind., and 14,000 pounds ¼ x 1-inch at 2.00c, delivered;

Cleveland—Shipments continue to be made by the local producer to automobile builders, but there has been no increase in demand over that in recent weeks. Other miscellaneous orders are small. The price holds at 1.65c, Cleveland.

San Francisco—Carnegie Steel Co. is low on 45 tons medium round ½-inch bar rivet steel for the Mare Island navy yard at 2.25c, delivered, while Republic Steel Corp., Youngstown, O., bidding 1.86c is low, f.o.b. works, bids May 17.

New Cold-Finished Price Plan Well Supported

Cold Finished Prices, Page 45

Pittsburgh—Effective support has been given the new reclassification in cold-finished steel bar prices, although on a light volume of new orders last week. Changes went into effect May 16 on all new business. Users under contract prior to that date are permitted until June 30 to order the old classification. Specifications still lack improvement over the April rate. The base of $1.70 per 100 pounds on lots of 10,000 pounds or more is being applied. Turned and ground shafting is unchanged.

Keystone Drawn Steel Co., Spring City, Pa., is low on 21,500 pounds of cold-rolled bars for the Baldwin, N. Y., ordnance plant at $590.85, delivered.

Cleveland—Revised prices on cold-finished steel bars will not be fully tested until the approach of the third quarter, as most consumers are covered by contract until then. Specifications have not been stimulated. Buyers' reaction to the single price and revision of extras has not been unfavorable, according to sellers, as readjustments are made in instances where extras have been unsatisfactory both to mills and consumers.

Tin Plate Production At Slightly Lower Rate

Tin Plate Prices, Page 45

Pittsburgh—Mill operations range from 42 to 48 per cent, averaging 45 per cent, off from the 45-50 per cent rate of the prior week. A purchase by the leading canmakers is expected daily. The price of $4.75, per base box, is unchanged.

Youngstown, O.—Shipments of tin plate continue steady, with mill operations at about 50 per cent. Instead of the usual seasonal letdown in tin plate production, there are indications that within a short time additional business is likely to speed up operations.

Plates

Barge Order Will Take 2200 Tons — 820 Tons Placed for California Gas Holders

PLATE PRICES, PAGE 45

Pittsburgh—The largest barge order in over a year has officially been closed by the American Bridge Co. This order requires approximately 2200 to 2400 tons of plates and shapes, mainly the former, for 12 steel cargo barges for the Pittsburgh-New Orleans trade, to be built for the American Barge Lines. General demand for plates, however, shows little improvement and mill operations are spotty. District interests are figuring two steel hull whirler derrick boats for the Memphis, Tenn., engineer, bids to go in June 1. The current 1.60c, Pittsburgh, base is general.

New York—Further moderate buying by oil companies, with an occasional order for a municipal tank, feature a dull plate market. The price is unchanged at 1.70c, base, Coatesville, Pa.

Philadelphia—A few small orders for tanks constitute the principal current business in the plate market. Philadelphia opens bids June 2 on a 42-inch pipe line requiring 150 tons. Prices are holding at 1.70c, base, Coatesville, Pa.

Cleveland—The local 112-inch and 152-inch plate mills were operated last week, but probably will be down this week. Business is comprised mainly of small, miscellaneous orders, with the price firm at 1.60c, Pittsburgh.

Bids will be opened by the government May 25 on 10 to 100 tanks each requiring 14 tons of plates, for Wright field, Dayton, O.

Chicago — Freight car and line pipe builders continue quiet buyers of plates, and activity in tank work also is restricted. A gas holder for the Southern Counties Gas Co., San Diego, Calif., involving 820 tons of plates, has been placed.

Contracts Placed

2200 to 2400 tons, depending upon

length, 12 steel cargo barges for the American Barge Lines, to American Bridge Co., Pittsburgh, barges to be 155 or 160 feet long, 35 feet wide and 11 feet deep.

820 tons, gas holder for Southern Counties Gas Co., San Diego, Calif., to Chicago Bridge & Iron Works, Chicago.

100 tons, tank, Lititz, Pa., to Chicago Bridge & Iron Works, Chicago.

Contracts Pending

150 tons, standpipe, Barksdale Field, Shreveport, La.; bids June 15 with constructing quartermaster.

142 tons, for 42-inch pipe, Philadelphia; bids June 2.

Unstated, ten to 100 tanks, Wright aviation field, Dayton, O.; bids May 25.

Wire Buying Shows Little Change from April Rate

Wire Prices, Page 45

Chicago — Shipments of wire products hold close to the April rate, with prospects for improved business over the next 30 days regarded as unfavorable. Demand for jobbing products from the agricultural districts is dull, while activity in manufacturers' wire ordinarily experiences a seasonal decline at this time. Prices are steady, wire nails continuing $2 in carload lots, with plain wire 2.25c.

Worcester—While some increase in merchants' demand for wire is noted, buying is spotty. Output still is light. Prices are the steadiest in more than a year, at 2.30c, Worcester, for plain bright wire to dealers. A New Haven, Conn., independent mill has been fairly active on government orders for several months.

Philadelphia—Wire and wire products are moving slowly but prices are generally steady.

Buffalo—The principal local wire works will resume open-hearth operations early in June, it is reported. No ingots have been produced in this plant for two months or more.

Pittsburgh—Specifications for wire products generally displayed little change. Fencing has been largely hampered by rural financial conditions and there is little change for nails and plain manufacturers' wire. Apparently there is little softness in prices at 2.20c for plain wire and $1.95 minimum on nails. The price for third quarter is withheld.

Cleveland—The market is quiet. Plain wire continues at 2.20c, Cleveland; nails at $1.95 in carloads to jobbers, and $2.10 in carloads to dealers. Wire rods are firm at $37, Pittsburgh and Cleveland.

Western Pipe & Steel Co. of Illinois, 2900 West Vermont avenue, Blue Island, Ill., has changed its name to Wepsco Steel Products Co.

Railroads

Track Maintenance Gives Mills At Chicago Better Tonnage — Most Roads Hold Back Orders

TRACK MATERIAL PRICES, PAGE 45

Pittsburgh—Some action by railroads is still awaited on pending work or new inquiry but conditions of the past 60 days or more generally prevail. However, some activity is noted at the local rail mill which is scheduled to resume May 23 for about two weeks. Approximately 1100 to 1200 men will benefit by the temporary resumption. Inquiry from the New York Central for most of its rail and acccessories still is open. Light rails are quiet.

Pennsylvania railroad plans to construct a two-unit railroad car similar to an automobile and equipped with pneumatic tires, for experimental purposes. The cars will be streamlined and powered by a diesel engine of 170 horsepower. According to present plans the two units will weigh about 25 tons, compared with the 65-ton steel passenger cars now in use.

New York—Bids will be opened at Newark, N. J., by the municipality for eight miles of single track.

Pennsylvania railroad has ordered a stainless-steel pneumatic tired rail car of the Budd-Micheline type from the Edward G. Budd Mfg. Co. The Reading recently ordered one.

Cleveland—A few moderate size orders for rails for industrial companies have been placed recently. No demand is appearing for large tonnages. The Wheeling & Lake Erie railroad may place its 50 cars any day.

Chicago—Recent track accessory orders involve 2000 to 3000 tons, but new inquiry continues dull. Production of track material is at a relatively higher rate than that of most other steel products, coincident with a slight gain in track maintenance work. The freight car market continues dormant, inquiry as well as awards being lacking.

Chicago, Burlington & Quincy railroad has indicated that it will give temporary employment to 2000 men for 120 days each, and will expend $239,000 for material purchases, the Chicago campaign committee for reemployment of men and money has announced.

Toronto, Ont.—Montreal Tramways Co., operator of street railways, has received 1000 tons of steel rails from Dorman, Long & Co., Middlesbrough, Eng. The order originally was given the United States Steel Corp. but British rails were cheaper since the pound sterling was depreciated. Other Canadian orders are likely to be let to British makers. Steel of the class required for this work is not made in Canada.

Car Orders Pending

Mexican National, six first class and 10 second class coaches. Bids asked.

Rail Orders Pending

Panama Canal, 500 tons, 90-pound steel rails, with fastenings. Bids June 8.

Semifinished Price Advance More General

Semifinishd Prices, Page 52

Pittsburgh—The $2 a ton advance in sheet bars, billets and slabs has not induced buyers to foresee their needs and order accordingly. Sheet bars, billets and slabs will be $28-$29, Pittsburgh. There has been no announcement for forging billets or wire rods, which remain at $33 and $37, respectively.

Cleveland—The $2 per ton increase in sheet bars, billets and slabs, to $28, base, Cleveland or Youngstown, O., announced by the leading producer here will not be tested until third quarter, as practically all consumers depending upon this source are under contract for the present quarter. These consumers have not yet been officially notified of the advance. It is the producers' intention to apply it on all new business. Specifications continue at a slow rate.

Youngstown, O.—The announced advance of $2 a ton on billets, sheet bars and slabs for third quarter delivery to $28, Youngstown and Cleveland, is being accepted by practically all valley district producers. Consumers of billets and sheet bars cover needs cautiously in this district, but the impending advance may lead to more liberal specifications.

Change Bolt Catalogs

Washington — All manufacturers who have accepted the simplified practice recommendation covering the packaging of carriage machine and lag bolts will identify the simplified units of packing in their new catalogs and trade lists.

Structural Shapes

Week's Awards, 20,000 Tons, Largest Since Late March—12,000 Tons Placed for New York Grade Eliminations—Interest Now Centers On Washington Contracts

STRUCTURAL SHAPE PRICES, PAGE 45

New York—Twelve thousand tons of structural shapes for the Long Island railroad's grade elimination work at Valley Stream, N. Y., have been awarded, 60 per cent to the National Bridge Co., Long Island City, N. Y., and 40 per cent to the American Bridge Co., New York. The job may require 15,000 tons. Other large structural jobs that came out several weeks ago are being closed. General contracts awarded in the East include the extensible building, department of agriculture, Washington, requiring 10,000 tons, to Aronberg-Fried Co. Inc., New York. Bids will be closed this week on a bridge at Seabright, N. J., requiring 2485 tons. Several thousand tons will be needed for rebuilding the Cunard piers recently destroyed by fire.

Boston — Bids on several New England postoffices will be closed soon, these requiring moderate tonnages of shapes. Bids are in on a few small bridge jobs. Approximately 275 tons have been placed for the Arlington street bridge, Boston.

Philadelphia — Structural steel specifications are being released by the Pennsylvania railroad following recent completion of its financing program. Of $68,000,000 to be expended this year $47,000,000 will be for electrification. In addition, $9,823,000 will be spent in Philadelphia, and $7,854,000 for miscellaneous improvements; $2,000,000 for Newark, N. J., station facilities; and $1,500,000 for tunnel and other work at Baltimore. With current shape buying light, fabricators are centering their attention on approximately 35,000 tons of shapes for three government projects at Washington on which contractors' bids may be opended by June 2.

Pittsburgh—Plain material specifications are holding at approximately the rate of the past month or more, although maintained to a large degree by federal projects. As a result of orders last week at Harrisburg, Pa., withholding the award of pending contracts for construction at state-owned institutions, approximately $6,000,000 in construction work will be tied up. Work which had been started will be continued. The base price of 1.60c for plain material is applied on the majority of present specifications.

Buffalo—Bids for the Buffalo armory, which will require more than 6000 tons of shapes, are to be received early in June. Several smaller projects are pending, including the Jamestown, N. Y. armory, for which the general contract has been awarded.

Cleveland—Although part of the Main street bridge, Cleveland, will be redesigned for concrete, to aid local employment the five main and six shore spans will be steel, requiring approximately 6000 tons of shapes. Current awards are small, but more projects are developing. For the Montgomery locks, Ohio river, near Beaver, Pa., for which Booth & Flinn Ltd., Pittsburgh, are low, there will be required 1531 tons of steel piling, in addition to 838 tons for the inside wall. Contract has been awarded to the Austin Co., Cleveland, by the Goodyear Zeppelin Corp., Akron, O., for building a blimp dock near Chicago, requiring 160 tons of shapes.

Chicago — Structural work is slightly more active, though tonnage involved in orders, and inquiries generally, is unchanged. Bridge work in nearby districts requires about 4000 tons. Plain material generally is 1.70c on new business.

Contracts Placed

12,000 tons, grade elimination, Long Island railroad, Valley Stream, N. Y.; 60 per cent to National Bridge Co., Long Island City, N. Y.; 40 per cent to American Bridge Co., New York. Job may require 15,000 tons.

825 tons, port development, Cartagena, Colombia, to United States Steel Products Co., New York, through Frederick Snare Corp., New York.

800 tons, state project, 3-truss span over Stillaguamish river, Silvana, Wash., to Wallace Bridge & Structural Steel Co., Seattle.

500 tons, airport, New Orleans, to Jones & Laughlin Steel Corp., Pittsburgh.

450 tons, viaduct, Honda, Calif., for Southern Pacific railroad, to Virginia Bridge & Iron Co., Roanoke, Va.

450 tons, state project, cantilever span, Skykomish river, Washington, to Hoflus Steel & Equipment Co., Seattle.

425 tons, several state highway bridge, Virginia, divided among Roanoke Bridge & Iron Co., Roanoke, Va., and Virginia Bridge & Iron Co., Roanoke, Va.

390 tons, school, Minneapolis, to Laclede Steel Co., St. Louis.

330 tons, state bridge, Cole county, Oklahoma, to Muskogee Iron Works, Muskogee, Okla.

300 tons, Lehigh Water Co. project, Easton, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

275 tons, bridge, rebuilding, Arlington street, Boston, over Boston & Albany railroad, department of public works, to Boston Bridge Works, Boston; Coleman Bros., Boston, contractor.

250 tons, factory, Hinde & Dauch Paper Co., Sandusky, O., at Hoboken, N. J., to unstated fabricator.

250 tons, postoffice, Texarkana, Ark., to Laclede Steel Co., St. Louis.

248 tons, public schools, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.

200 tons, highway bridge, Hamestown, Iowa, to McClintic-Marshall Corp., Bethlehem, Pa.

185 tons, postoffice, Lewisburg, Pa., to Milton Steel & Supply Co., Milton, Pa.

175 tons, Museum of French Art, East Sixtieth street, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.

165 tons, store, Pittsburgh, for W. T. Grant Co., to McClintic-Marshall Corp., Bethlehem, Pa., through Marr & Nettrour Contracting Co., Pittsburgh, contractor.

165 tons, bridge, Middleville, Mich., for Michigan state highway department, to Lackawanna Steel Construction Co., Buffalo.

150 tons, postoffice, Mankato, Minn., to Minneapolis-Moline Power Implement Co., Minneapolis.

150 tons, bridge, Madison county, Ill., state highway commission, to Missouri Bridge & Iron Co., St. Louis.

150 tons, suspension bridge, Lewis river, Cowlitz county, Washington, to Isaacson Iron Works, Seattle.

140 tons, school, Holland, N. Y., to Ernst Iron Works, Buffalo.

125 tons, Norwich, Conn., free academy, to New England Structural Co., Everett, Mass.

120 tons, stadium, Niagara university, Niagara Falls, N. Y., to Dobbie Foundry & Machine Co., Niagara Falls, N. Y.

113 tons, state bridge, Allenwood, Pa., to Fort Pitt Bridge Works Co., Pittsburgh.

100 tons, school, Carlstadt, N. J., to Hudson Structural Iron Works Inc., Jersey City, N. J.

100 tons, three bridges near Gorman, Calif., to unnamed interest.

100 tons, plant addition, Continental Can Co., New Orleans, to Laclede Steel Co., St. Louis.

100 tons, beam spans, Wabash railroad, to American Bridge Co., Pittsburgh.

100 tons, church, East Orange, N. J., to Albert Smith & Sons Inc., Newark, N. J.

100 tons, bridge, New Haven railroad

Awards Compared

	Tons
Awards, week ended May 21	**20,623**
Awards, week ended May 14	**5,549**
Awards, week ended May 7	**11,551**
Awards, this week in 1931	**19,353**
Av. weekly awards, 1931....	**34,236**
Av. weekly awards, 1932....	**13,826**
Av. weekly awards, April..	**11,527**
Awards to date, 1931	**818,519**
Awards to date, 1932.....	**290,348**

at Buckland, Conn., to Berlin Construction Co., Berlin, Conn.

100 tons, high school building, Ft. Edwards, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

100 tons, smelter jigs for the Eagle-Picher Lead Co., Picher, Okla., to Ozark Engineering Co., St. Louis.

100 tons, highway spans, Adair county, Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Contracts Pending

14,000 tons, department of justice building, Washington; opening postponed to June 1.

12,000 tons, department of labor and interstate commerce commission building and connecting wing, Washington; Great Lakes Construction Co., Chicago, low.

10,000 tons, postoffice, Washington; opening postponed to May 24.

10,000 tons, viaduct and other work, west side, New York, by New York Central railroad.

10,000 tons, postoffice department building, Washington, bids in.

2500 tons, subway section No. 6, Newark, N. J.; bids June 9.

2500 tons, high school, Scranton, Pa.

2369 tons, piling, Montgomery locks, Ohio river, Beaver, Pa.; Booth & Flinn Ltd., Pittsburgh, low.

1000 tons, bridge at St. Louis, for St. Louis-San Francisco railroad.

1000 tons, state highway bridges, New York.

700 tons, postoffice, Sioux City, Iowa.

590 tons, bridge, Beach Thorofare, Ocean City, N. J., Merritt-Chapman & Scott Corp., New York, low, bids May 17.

500 tons, children's sanitorium, Buena Vista, Md.

400 tons, four schools, Anne Arundel county, Maryland.

389 tons, bridge over Rio Honda river for Los Angeles county, Calif., bids May 31.

368 tons, bridge over Los Angeles river for Los Angeles county, Calif., bids opened.

350 tons, postoffice, Daytona Beach, Fla.; Algernon Blair, Montgomery, Ala., low.

350 tons, 2-story transit shed and warehouse, department of public works, Richmond, Va., City Building Corp., Richmond, general contract. Building is steel framed with corrugated aluminum sides, 77 x 228 feet.

300 to 400 tons, piling, Atlantic Refining Co., Point Breeze, Philadelphia; bids May 23.

275 tons, hospital, Waterford, Conn.

250 tons, approximately, seawall, Cairo, Ill.

250 tons, approximately, seawall, Helena, Ark.

250 tons, approximately, seawall, Carruthersville, Mo.

230 tons, school, Oil City, Pa.; contractors' bids in.

225 tons, store building, S. H. Kress & Co., East Orange, N. J.

200 tons, postoffice, Norristown, Pa., bids May 19.

190 tons, Hanscheete apartments, San Francisco, bids opened.

180 tons, highway bridges, Virginia; bids in.

130 tons, blimp dock near Chicago, Goodyear Zeppelin Corp., Akron, O., Austin Co., Cleveland, general contractor.

125 tons, five bridges for Monterey county, Calif., new bids May 20.

Unstated tonnage, building, St. Elizabeth hospital, Washington; bids May 28.

Concrete Bars

Highway Work and Public Building Construction Taking Considerable Tonnage—Week's Awards Lighter, at 3200 Tons — New Projects Call for 8400 Tons

REINFORCING BAR PRICES, PAGE 45

Chicago—Increasing road work is bringing heavier rail steel reinforcing bar shipments. Indiana highway department shortly will buy about 1000 tons. Bids on the St. Louis auditorium, 1000 tons have been held up temporarily.

Postoffice jobs include 300 tons for Danville, Ill., and 250 tons for Kenosha, Wis. Veterans' hospital buildings at Des Moines, Iowa, include 350 tons. Chrysler Corp., Detroit, is expected to build an exhibit structure on the Chicago Century of Progress grounds, in addition to the General Motors Corp. building now under way.

Boston—Foreign steel and low-cost rerolled material have an easy influence on reinforcing bar prices, domestic distributors being unable to compete on some work. Volume is light. About 100 tons for the Arlington street bridge here have been placed.

New York—Awards this week are expected to include 2700 tons for a port development at Cartagena, Colombia, and 1400 tons for a grade elimination on Long Island, the former tonnage to an American seller. Other lettings are light. Several hundred tons are pending for highway work in both New York and New Jersey, the latter barring foreign steel. Prices on domestic material at 1.95c, mill lengths delivered, are unsettled by rerolled and foreign steel.

Philadelphia—An award of 500 tons of concrete bars for the Lehigh Water Co.'s project at Easton, Pa., to the Jones & Laughlin Steel Corp., Pittsburgh, is the outstanding feature of the market. Prices are easy on sizable tonnages.

Pittsburgh—Building and highway outlets for reinforcing steel show little change. A Pennsylvania state highway letting, May 20, will take several lots of reinforcing steel for bridges, box culverts and reinforced concrete pavement. A $210,000 sewer along Girty's Run, Pa., is expected to take a tonnage of mesh. Billet bars, mill length, generally are 1.60c, Pittsburgh, to the ultimate consumer.

Cleveland—Road work is more active, several fair size jobs to be awarded soon by the Ohio highway commission, Columbus. It appears now that the Main street bridge, Cleveland, will have two spans of concrete. The project, however, has not yet reached the bidding stage.

Birmingham, Ala.—A number of orders under 100 tons each have been placed here, though May business is disappointing. A fairly good tonnage was booked in April.

Awards Compared

	Tons
Awards, week ended May 21	**3,275**
Awards, week ended May 14	**5,248**
Awards, week ended May 7	**2,454**
Awards, this week, 1931	**5,510**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**4,453**
Av. weekly awards, April	**4,661**
Awards, to date, 1931	**140,517**
Awards to date, 1932	**93,477**

Contracts Placed

600 tons, City hospital, Baltimore, to Truscon Steel Co., Youngstown, O.

500 tons, filtration plant, Lehigh Water Co., Easton, Pa., to Jones & Laughlin Steel Corp., Pittsburgh, through Turner Bros. Construction Co., contractor.

400 tons, grade elimination, Elmira, N. Y., divided among Truscon Steel Co., Kalman Steel Co., and Concrete Steel Co.

327 tons, highway work in Orange county, Calif.; to unnamed interest.

245 tons, postoffice, High Point, N. C., to Knoxville Iron Co., Knoxville, Tenn.; Spence Bros., Saginaw, Mich., general contractors.

240 tons, export to Panama, to United States Steel Export Corp., New York.

230 tons, entrance to Arlington cemetery, Washington, to E. T. Edwards, Columbia, Pa.

150 tons, bridges, West Virginia, to unstated fabricators.

132 tons, nurses' and attendants' quarters, Veterans' hospital, Perry Point, Md., to Sweet's Steel Co., Williamsport, Pa.; J. L. Robinson Construction Co., Baltimore, general contractor.

126 tons, building, Swift & Co., Mobile, Ala., to Gulf States Steel Co., Birmingham, Ala., through owners; G. A. Miller, Tampa, Fla., contractor.

125 tons, Washington, to Hudson Supply & Equipment Co., Washington.

100 tons, state bridge, Thomaston, Conn., to Truscon Steel Co.; Lee Construction Co., Boston, general contractor.

100 tons, highway work in six counties, Butte, Mont., to unnamed interest.

Contracts Pending

2200 tons, extensible building, department of agriculture, Washington; Aronberg-Fried Co. Inc., awarded general contract.
1000 tons, municipal auditorium, St. Louis; bids withdrawn.
1000 tons, Indiana highway surfacing.
700 tons, high school, Scranton, Pa.
650 tons, state bridge, Ocean City, N. J.
350 tons, Veterans' hospital buildings, Des Moines, Iowa.
340 tons, bridge, Beach Thorofare, Ocean City, N. J.; Merritt-Chapman & Scott Corp., New York, low.
300 tons, postoffice, Danville, Ill.; bids in; H. B. Ryan Co., Chicago, general contractor.
300 tons, postoffice, Wichita, Kans.
275 tons, foundations, federal court house, New York; George J. Atwell Foundation Co., New York, low.
250 tons, postoffice, Kenosha, Wis.
240 tons, square 1 and 1¼-inch, Panama, Laclede Steel Co., St. Louis, low; May 9.
225 tons, Paper building, Hoboken, N. J.
155 tons, St. Vincent's hospital, Bridgeport, Conn.
150 tons, General Motors Corp., building on Chicago Century of Progress exposition grounds. Albert Kahn, Detroit, architect.
120 tons, highway work in Contra Costa county, Calif.; bids June 1.
120 tons, dock extension, Fort Mason, San Francisco; bids opened.
119 tons, highway work, Benson-Douglas highway, Phoenix, Ariz.; bids in.
119 tons, school, Dobbs Ferry, N. Y.
105 tons, highways, Virginia, bids in.
Unstated tonnage, mesh, and including 85 tons of bars, sewer and bridge, Girty's Run, Pa.

Nut, Bolt Orders Small And Production Is Low

Bolts, Nuts, Rivets Prices, Page 45

Pittsburgh—With operations averaging under 20 per cent of capacity, little encouragement is felt in the bolt and nut market. Orders generally are for small lots and specifications have been spotty. Prices of 75 off list for bolts and nuts and 2.25c on large rivets appear fairly firm.

Chicago—Small lots predominate in orders for bolts, nuts and rivets, with only a slight change in total business, compared with the April rate. Prices are reported firm, and third quarter quotations will be announced shortly with the issuing of contracts for that period.

Calls Industrial Conference

Princeton university, Princeton, N. J., has scheduled its second conference course in industrial relations for Sept. 19-24. J. M. Larkin, assistant to the president, Bethlehem Steel Co., Bethlehem, Pa., is to be a speaker.

Pipe

Municipal Buying Slows Up—Large Line Projects Lacking—Tubular Goods Quiet

PIPE PRICES, PAGE 60

New York—George J. Atwell Foundation Co., New York, is low bidder for the general contract on the federal courthouse here, which will require 3500 tons of steel pipe. Cast pipe lettings are small. One gas utility has placed several orders, mainly with the Emaus, Pa., foundry. State work calls for several fair tonnages. New York city is expected in the market next month for substantial lots, including several thousand tons of 30-inch.

Boston—New inquiry for cast pipe has slowed up, many municipalities having covered for the year. Some will not extend water lines and practically all such buyers are taking a smaller tonnage than usual. Prices continue weak. Revere, Mass., has bids on several hundred tons, the local foundry being low on sand-spun, while the Burlington, N. J., foundry is low on pit-cast.

Pittsburgh—District mill operations continue at last week's rate of around 15 to 20 per cent. There appears to be little in prospect to bolster this rate as proposed municipal or line pipe buying still is withheld for financing arrangements. Rolling of the recently awarded 8300-ton Irak pipe line order is expected to be delayed for some time.

Cleveland—Building construction work in this district is at a low ebb, and demand for pipe from this source is the quietest of many months.

Chicago—Bids are being taken by Chicago on 1024 tons of 4-inch and 12-inch cast pipe Inquiry otherwise is quiet, and recent orders are only for small lots. Prices continue to lack strength.

Birmingham, Ala.—With some of the larger shops operating intermittently, pipe production is at low ebb. Lettings are few and tonnage light.

Cast Pipe Placed

450 tons, 6 to 14-inch, Wellesley, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.
300 tons, 6, 8 and 10-inch, Lathams' Corners, N. Y., to R. D. Wood & Co., Florence, N. J.
200 tons, 2 to 8-inch, Bremerton, Wash., district improvement, to R. D. Wood & Co., Philadelphia.
182 tons, small sizes, state job, Dannemora, N. Y., to Donaldson Iron Works, Emaus, Pa.
125 tons, 16-inch, Orangeburg, N. Y., to Donaldson Iron Works, Emaus, Pa.
125 tons, 6 to 16-inch, gas installation, New York district, to Donaldson Iron Works, Emaus, Pa.
100 tons, Rhinecliff, N. Y., to Donaldson Iron Works, Emaus, Pa.
100 tons, 8-inch, Waterbury, Conn., to Donaldson Iron Works, Emaus, Pa.
100 tons or more, small sizes, Stoneham, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.

Steel Pipe Placed

Unstated tonnage, 84 sections, 14-foot lengths, 16-inch I.D. steel shore pipe, United States engineer, Vicksburg, Miss., to United Welding Co., Middletown, O. Harry Bros. Co., New Orleans, awarded 23 sections spiral riveted pressure pipe.

Cast Pipe Pending

1024 tons, 4 and 12-inch for Chicago; bids May 25.
1000 tons, 4, 6 and 8-inch class 150, East bay municipal utility district, Oakland, Calif.; bids May 27.
400 tons, small sizes, New York state work.
349 tons, 24-inch class C, Glendale, Calif.; bids May 26.
200 tons, pumping station and sewer, Brooklyn, N. Y.
150 tons, small sizes, Tackahoe, N. Y.; bids in.
125 tons, 6 and 8-inch, state women's reformatory, Bedford Hills, N. Y., bids June 7.
115 tons, bell and spigot and flanged special castings and fittings, metropolitan district commission, Boston; bids in.
Unstated tonnage, small sizes for Maple Bluff, Wis.
Unstated tonnage, 10,000 feet, various sizes, Revere, Mass.; Warren Pipe & Foundry Co., Wharton, N. J., low on sand-spun, United States Pipe & Foundry Co., Burlington, N. J., low on pit-cast.

Steel Pipe Pending

3500 tons, foundations, federal courthouse, New York; George J. Atwell Foundation Co., New York, low.
Unstated tonnage, 3050 feet black lap-welded steel tubing, up to 4-inch, navy, Brooklyn, N. Y., and Norfolk, Va.; 350 feet, up to 5-inch, Puget Sound, Wash.; 1800 feet seamless up to 9.625-inch O.D., Philadelphia and Norfolk, bids May 31.
Unstated tonnage, 5100 feet, 20-inch riveted shore pipe, United States engineer, Galveston, Tex.; bids in.
Unstated tonnage, 9040 feet, 20-inch, discharge pipe, United States engineer, Philadelphia.
Unstated tonnage, 10,500 feet, up to 5-inch, mainly small sizes, navy, east and west yards; bids May 24 at Washington.
Unstated tonnage, 325,370 feet, partly 3, 4, 5 and 6-inch, but mainly smaller sizes, divided as follows: 122,470 feet black standard, 198,150 feet galvanized standard, and 4750 feet extra strong black, navy yards; bids May 31 at Washington.

Strip

Better Specifications Received From Various Consumer Lines—Prices Are Holding Steady

STRIP PRICES, PAGE 45

Pittsburgh—Hot-rolled strip production took a marked turn upward last week to 35 to 40 per cent for the district. This was occasioned by full week operations in two mills but represented the rolling of an accumulation of orders rather than an upturn in specifications. Prices of 1.50c for wide and 1.60c for narrow hot-rolled apply, as does 2.00c base on cold. Usual concessions continue to larger buyers.

New York—Strip steel market is devoid of feature, with demand light and prices unchanged from the recent level.

Philadelphia—Consumers of steel strip manifest little interest in requirements for future use. Hot-rolled strip is steady at 1.40c and 1.50c, Pittsburgh, for wide and narrow, and cold-rolled is 2.00c, Pittsburgh.

Youngstown, O.—While some increase in volume of specifications for both cold and hot-rolled strip is coming from auto partsmakers, most tonnage is for other miscellaneous consumers. Quotations are steady, with possibly higher third quarter billet prices as a further stiffener.

Cleveland—Demand for strip steel from stove and range manufacturers is improving. A Cleveland mill has booked some orders for the Ford Motor Co., principally for strip under 24 inches. Strip for Ford automotive frames, it is understood, was placed elsewhere. Hot rolled strip is steady at 1.40c and 1.50c, Pittsburgh, for wide and narrow widths, respectively, and cold-rolled, 2.00c, Cleveland. Otis Steel Co. had on its 24-inch and 72-inch strip mills last week, and with prospects of continuing them in operation this week.

Chicago—Automotive orders for hot and cold-rolled strip still are spotty. Specifications for the latter are slightly less active than a month ago, while requirements of miscellaneous users are quiet and unchanged. Cold-rolled strip generally is 2.00c, Pittsburgh-Cleveland. Mill operations are 15 to 20 per cent.

Steel Operating Rate Up to 25.5; May Ease This Week

Pittsburgh—Steelmaking capacity was barely 20 per cent engaged last week, off one point. However, this week some departments which had eased off last week may resume, and ingot production will be back to 21 per cent. The local rail mill is expected to begin a two weeks rolling May 23. Blast furnace schedules were unchanged at 17 per cent, or 9 active steelworks furnaces out of 54. Sheet output continues at 25, with tin mill operations off several points at 45 per cent. Strip production is higher at 35 to 40; pipe is unchanged at about 15.

Operations week ended May 21	**25.5**
Operations, week ended May 14	**24**
Operations, week ended May 7..	**24**
Operations, this week, 1931....	**44**
High for 1932, Feb. 6.....	**28.5**
Low for 1932—Jan. 2, Apr. 9, 16	**22**

Philadelphia—Steelmaking operations in the East continue at 13-14 per cent, but with little change in the near future expected.

Buffalo — Buffalo district steel works will operate at 24 per cent this week, it is anticipated, a drop of 11 points from last week's high. Staggered operating schedules account for the change. Open-hearth batteries which suspended production on May 20 will be down until June 1, it is expected. This week finds nine open hearths on.

Youngstown, O.—Steel plant operations here last week held unchanged at 25 per cent, but a slight gain is in prospect for this week when further automotive steel buying is expected. Of the 83 open hearths in the district, 25 are melting.

Chicago—Ingot production held during the past week at 21 per cent and is expected to maintain this mark during the coming week. Blast furnace schedules are unchanged, with eight steelworks stacks active out of 36 in the district. Sheet operations hold around 20 to 25, with strip unchanged at 15 to 20.

Cleveland—Steel ingot production was advanced from 32 to 38 per cent during the week ended May 21, and is scheduled for 38 per cent this week. Otis Steel Co. lighted four of its eight open hearths. Corrigan, McKinney Steel Co. continues with four of its 14 open hearths active, and American Steel & Wire Co. with five of its seven. Otis Steel Co. had its 112 and 152-inch plate mills on last week, but is not likely to continue them active this week. It also had in operation its 24 and 72-inch strip mills, and prospects are good for continuing them this week.

Birmingham, Ala. — Steelmaking operations last week were maintained at 45 per cent, but Ensley works of the Tennessee, Coal, Iron & Railroad Co. closed at the end of the week, including five open hearths, a blast furnace and rail mill. This will give a 25 per cent rate.

Pueblo, Colo.—Rail mill here of the Colorado Fuel & Iron Co. was shut down May 12. The one blast furnace that has been active has been put on ferromanganese.

Warehouses In East Feel Foreign Competition

Warehouse Prices, Page 60

New York—Warehouse buying is steadier although volume continues unsatisfactory. Competition with imported steel, especially bars and small shapes, unsettles prices.

Boston—Extreme dullness continues in the New England warehouse market, prices being fairly well maintained in face of severe price competition from foreign steel, especially bars and some wire products. Some jobbers have been practically forced to handle this low-priced imported steel, including several who have previously confined distribution to domestic materials.

Philadelphia—Demand for steel from warehouse continues at less than the April rate but prices are unchanged.

Pittsburgh—Volume of steel sales from stock holds at about the same rate as in April. An early announcement on cold-finished steel bars may be expected, following the recent mill price change.

Detroit—Effective May 19 the warehouse price on cold-finished products was adjusted in conformity with the new mill prices effective May 16. The new warehouse base on rounds and hexagons is 3.17c and on flats and squares 3.67c. Following are new quantity extras on cold-finished: 1000 pounds or more at once, base; 999 to 500 pounds, 25c per 100 pounds; 499 to 300 pounds, 75c; 299 to 100 pounds, $1; less than 100 pounds, $1.25.

Chicago—Sales show practically no change from the past several weeks, orders being restricted in number and size. Prices generally are unchanged, although bolts have been advanced to 70 off list.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$15.50 to 16.00
Pittsburgh, dist. fur.	15.50
Pittsburgh, delivered	16.13 to 16.63
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Philadelphia, delivered	14.76 to 15.01
Virginia furnace	17.50
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.26 to 15.51

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	15.76 to 16.01

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	15.50
Pittsburgh, delivered	16.13 to 16.63
Chicago, furnace	15.50 to 16.00
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00 to 14.50

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.50
Pittsburgh, delivered	16.13 to 16.63

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.15 to 2.25
Connellsville foundry	3.00 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens	7.00
New England, del.	10.00
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.25 to 10.50
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50% (nom.)	22 cents
Brazilian, 46-48% (nom.)	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$33.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	33.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00 to 27.00
Pittsburgh, bessemer	26.00 to 27.00
Youngstown	26.00 to 27.00
Cleveland	26.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	27.00

SLABS

Pittsburgh	26.00 to 27.00
Youngstown	26.00 to 27.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	85.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.	113.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Prices Down 50 Cents in Pittsburgh and Valley Districts—Automotive Shipments Holding

PIG IRON PRICES, PAGE 52

Pittsburgh—With a reduction of 50 cents a ton in foundry, malleable and bessemer iron announced by the local maker, buying has not been stimulated. An inquiry for bessemer iron from a district steelmaker is noted. The price announcement places bessemer, malleable and foundry grades on a $15.50, Pittsburgh district furnace base.

Boston—Pig iron sales are at a low point with prices inclined to easiness. A good part of the current business is being done by the local foundry with a price range of $16 to $17.50, furnace. Buffalo iron is available at $14.50, furnace, and probably less. Stocks of foreign iron in New England are moving slowly, with Indian quoted $16, dock, and Dutch iron in the Providence, R. I., district is being delivered at nearby points at $16.

New York—Sales of pig iron amounting to about 700 tons constitute another light week's business. Approximately 1200 tons is pending. Buffalo iron is easy at $14.50, base, furnace.

Philadelphia—In the absence of a test, eastern Pennsylvania pig iron prices are unchanged at $14 to $14.25, base, furnace. A pipemaker is offering imported iron for resale, at prices which do not depress the domestic market.

Buffalo—One blast furnace here which has been producing silvery iron has been blown out, leaving only four stacks in operation. One or two of these are operating intermittently. Buffalo producers received no portion of a 1000-ton foundry order placed by an eastern melter. They obtained several 100-ton orders from nearby melters. The district price continues firm at $16. Eastern prices are not being met by local producers.

Youngstown, O. — Competitive quotations on pig iron for delivery outside this district have reduced the market by 50 cents a ton. This makes No. 2 foundry, malleable and bessemer $14.50 to $15, valley. Basic is nominally $14 to $14.50, while gray forge and No. 3 foundry are $14. The lower prices have been applicable for some time to iron for delivery outside this district. Little iron of any grade is being sold.

Cleveland—The 50-cent per ton reduction in valley pig iron has had no effect in the local market, as $15.50, base, Cleveland, furnace, plus switching charge and surcharge, still has the valley price for delivery in Cleveland beaten by 50 to 60 cents. It is in the outlying districts, especially where freight from the valley and from Cleveland is equal that the Cleveland furnaces will feel the sharpest competition. For nearby delivery the usual price has been $15, base, Cleveland furnace. Ford schedules are chiefly responsible for the improved volume of shipments from lake furnaces, compared with last month. Cleveland foundries have benefitted relatively little from renewed automotive work, and the local market is dull. Sales by lake furnaces to foundries in western Ohio, northern Indiana and Michigan hold at approximately 3000 tons per week. Inquiries are slightly more active, but none is for as much as 500 tons.

Cincinnati—Even carload buying of pig iron has been infrequent in this market the past week. Inquiry is lacking.

Chicago — Pig iron shipments show minor gains and the total movement this month is expected to exceed slightly that of April. Lack of new business, however, is rather disquieting. Inquiry also is light, while most orders are for lots of less than 500 tons. The market generally is $16, base, Chicago, with $15.50 applying on orders for 100 tons or more.

St. Louis—Melters show slightly more interest in prices for third quarter, but currently few orders are being booked, and only for spot delivery. Operations at jobbing plants are close to the lowest level of the year. Their April orders fell about 25 per cent from the March total. Stove makers report the smallest order books for this period in many years.

Birmingham, Ala.—A few sales for delivery to the Middle West and the East have had little effect on the market. No contracts are reported placed for third quarter.

Toronto, Ont.—Sales compare favorably with those of recent weeks. Melters enter the market at regular intervals, holding purchases to single carloads. The daily average for the melt is around 35 per cent.

Dr. Julius Klein, assistant secretary of commerce, estimates that between 20,000,000 and 25,000,000 persons are out of employment in Europe.

Ferromanganese Moving To Automotive Builders

Ferroalloy Prices, Page 52

New York — Slightly improved specifications from automobile manufacturers feature an otherwise sluggish market in ferromanganese. In general, the current rate is below a month ago. The market is unchanged at $75, duty paid. Domestic spiegeleisen, 19 to 21 per cent, also is moving at $27, furnace.

Chicago—Specifications for ferromanganese and spiegeleisen reflect the unchanged rate of steelmaking operations. Inquiry from small users of special ferroalloys is more active. Prices on small lots continue $75, duty paid, for ferromanganese, and $27, furnace, for spiegeleisen.

Pittsburgh—Demand for ferroalloys fails to show noticeable change from the rate prevailing for the past two weeks. Requirements of local steelmakers continue small, and there are no tonnage inquiries. On lots up to 1000 tons the $75 price for ferromanganese is holding, with $27 applying on spiegeleisen.

Iron Ore Slow; Prices Not Yet Established

Iron Ore Prices, Page 52

Cleveland — No sales of Lake Superior iron ore are in sight, and no prices have been issued by producers. The continued dull demand leads some shippers to believe the movement this year may drop to 10,000,000 tons. Iron ore mine tax valuations in two Michigan districts have been reduced a total of $811,000, much less than petitioned for by the mine operators, and considered by them inconsequential, since they pay in actual taxes approximately $3,500,000 a year. The Lake Superior Iron Ore association reports the following:

	Tons
Ore consumed in March	1,255,904
Consumed in April	1,039,799
Decrease in April	216,105
Consumed in April, 1931	2,825,647
Ore at furnaces May 1, 1932	27,961,831
On Lake Erie docks May 1, 1932	5,517,051
Total at furnaces and Lake Erie docks May 1, 1932	33,478,882
Total May 1, 1931	28,722,326

Scrap

Heavy Accumulations and Light Buying Force Prices to Lower Levels—Railroads Hold Back

Chicago—Sale of a small tonnage of heavy melting steel at $6.50 leaves the market at its recent top, but quotations on other grades are lower. In a number of instances quotations are entirely nominal, due to the lack of buying. No substantial increase in mill purchases is in early prospect as a result of the continued low rate of open-hearth operations. Railroads are withholding considerable scrap from the market, and one western road is understood to have an accumulation of about 50,000 tons of steel grades. Blast furnace and cast scrap material are particularly dull, while low phosphorus grades also have weakened considerably under pressure of poor demand.

Boston—Scrap is dull with prices on several grades sagging. Heavy

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.00
Boston, dealers	3.75 to 4.00
Buffalo, No. 1	7.00 to 7.25
Buffalo, No. 2	5.50
Chicago	6.00 to 6.50
Cleve., No. 1	6.75 to 7.00
Cleve., No. 2	6.50 to 6.75
Det., No. 1 deal.	5.00 to 5.50
Det., No. 2 deal.	3.00 to 3.50
E. Pa. del. mill	6.00 to 7.00
N. Y. deal, R. R.	4.00 to 4.50
N. Y. deal, No. 2	2.00 to 2.50
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	9.00 to 10.00
St. L. No. 1 sel.	6.75 to 7.25
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	9.50 to 10.00

COMPRESSED SHEETS

Buffalo, dealers	5.50
Chi. (Factory)	5.25 to 5.50
Cleveland	6.75 to 7.00
Detroit, dealers	5.00 to 5.50
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	8.75 to 9.25
Valleys	9.25 to 9.75

BUNDLED SHEETS

Buffalo	4.00 to 4.50
Cinci., deal.	5.50 to 6.00
Cleveland	6.00 to 6.50
Eastern, Pa.	5.00
Pittsburgh	8.00 to 8.50
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	3.00 to 3.50
Cincinnati	3.00 to 3.50
Detroit, dealers	2.50 to 3.00
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	11.00 to 11.50
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 10.50
Chicago (3 ft.)	7.50 to 8.00
Chicago (2 ft.)	8.25 to 8.75
Cinci., deal.	10.00 to 10.50
Detroit, deal.	8.00 to 9.00
Pitts. (open-hearth, 3 ft. and less)	11.00 to 11.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.00 to 6.50
Boston, con.	4.50 to 5.00
Buffalo	7.00 to 7.25
Chicago, net	5.00 to 5.50
Cinci., deal. net	3.75 to 4.25
Det., net deal.	2.50 to 3.00
Eastern, Pa.	6.00 to 6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	6.00 to 6.50

COUPLERS, SPRINGS

Buffalo	9.50 to 10.00
Chicago	7.00 to 7.50
Eastern Pa.	7.50 to 8.00
Pittsburgh	10.00 to 10.75
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	9.00 to 10.00
Eastern Pa.	9.00 to 10.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	11.50 to 12.00

FROGS, SWITCHES

Chicago	6.00 to 6.50
St. Louis	7.00 to 7.50

SHOVELING STEEL

Chicago	6.00 to 6.50
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.00 to 7.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	4.75 to 5.25
Buffalo, No. 2	7.00 to 7.25
Chicago, No. 1	5.25 to 5.90
Chicago, No. 2	6.00 to 6.50
Cinci., No. 2	6.50 to 7.00
Eastern, Pa.	7.50 to 8.00
N. Y., No. 1, deal.	5.00 to 5.50
Pitts., No. 2	9.00 to 10.00
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.00 to 8.50
N. Y., deal	5.00 to 5.50

BUSHELING

Buffalo, No. 1	5.50
Chicago, No. 1	4.50 to 5.00
Cinn., No. 1 dl.	4.50 to 5.00
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.00 to 4.25
Det., No. 1 new deal.	4.00 to 4.50
St. L., No. 1	3.50 to 4.00
Val. new No. 1	8.75 to 9.25

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.50 to 4.75
Chicago	3.00 to 3.50
Cin., deal	3.25 to 3.75
Cleveland	3.50 to 4.00
Detroit	2.25 to 2.75
Eastern, Pa.	3.50 to 4.00
N. Y., deal	1.35 to 1.50
Pittsburgh	6.00
St. Louis	1.50 to 2.00
Valleys	7.00 to 7.50

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.60 to .75
Buffalo	4.75 to 5.25
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit, deal.	3.25 to 3.75
Eastern Pa.	3.00 to 3.50
N. Y., deal	1.35 to 1.50
Pittsburgh	6.00 to 6.50

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, dealers	1.00 to 1.25
Buffalo	4.75 to 5.25
Chicago	3.50 to 3.75
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit, deal.	3.25 to 3.75
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	8.00 to 10.50
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.00 to 6.50
St. Louis	4.00 to 4.50

PIPE AND FLUES

Cinn., deal.	4.00 to 4.50

RAILROAD GRATE BARS

Buffalo	4.75 to 5.25
Chicago, net	5.00 to 5.50
Cincinnati	4.25 to 4.75
Eastern Pa.	6.00 to 6.50
N. Y., deal.	4.00 to 4.50
St. Louis	5.25 to 5.75

FORGE FLASHINGS

Boston, dealers	3.00 to 3.50
Buffalo	4.50 to 5.00
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	3.50 to 4.00

FORGE SCRAP

Boston, dealers	2.00 to 2.25
Chicago	8.50 to 9.00
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.50 to 6.00
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.50 to 7.00
Chi., steelworks	5.00 to 5.50
Cleveland	6.50 to 6.75
Eastern Pa., del.	6.00
Pittsburgh, O. H.	7.50 to 8.00
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	10.50 to 11.00
Boston, ship. pt.	8.25 to 8.75
Buffalo	10.00 to 10.50
Chicago	10.00 to 10.65
Eastern Pa.	14.50 to 15.00
St. Louis	10.50 to 11.00

SHAFTING

Boston, ship, pt.	8.50 to 9.00
Chicago	6.75 to 7.30
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.00 to 8.50
Boston, iron	10.00 to 11.00
Buffalo, iron	8.00 to 8.50
Buffalo, steel	8.50 to 9.00
Chicago, iron	6.25 to 6.75
Chi., rolled steel	6.75 to 7.25
Cincinnati iron	8.00 to 8.50
E. Pa. steel	7.50 to 8.00
E. Pa. iron	9.50 to 10.00
Pitts. iron	9.50 to 10.00
Pitts., steel	10.00 to 10.50
St. Louis, iron	6.00 to 6.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	7.00 to 8.00
Buffalo (Mach.)	9.00 to 9.50
Buffalo, cupola	8.00 to 8.50
Boston, textile	7.50 to 8.00
Chicago, mach.	6.70 to 7.25
Chi., railroad	6.15 to 6.70
Chicago, agri.	5.85 to 6.45
Cinn., mach. cup.	8.00 to 8.50
Cleve. cupola	7.00 to 7.50
Det., net deal.	7.00 to 7.50
E. Pa. cupola	9.00
N. Y. cup. deal	6.50 to 7.00
N. Y., del. local foundries	11.00
Pitts., cupola	9.00 to 9.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston, del.	3.50 to 4.00
Bost., mach. cast	7.50 to 8.00
Buffalo, break	5.50 to 6.00
Cleve., break	3.50 to 4.00
Detroit, auto, net deal.	9.00 to 9.50
Det., break., dl.	4.00 to 4.50
Eastern Pa.	8.00 to 8.50
N. Y. No. 1 dl.	4.00 to 4.50
N. Y. break, dl.	4.50 to 4.75
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston Consum.	8.00 to 8.50
Buffalo	8.00 to 8.50
Chicago, agri.	5.50 to 6.00
Chicago, R. R.	6.50 to 7.00
Cinci., R. R. del.	8.00 to 8.50
Cinci., agri. del.	7.75 to 8.25
Cleveland, rail	7.50 to 8.00
Det. auto deal.	7.00 to 8.00
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING
5 feet and over

Birmingham	9.00 to 9.50
Boston, deal.	5.50 to 6.00
Buffalo	7.00 to 7.50
Chicago	8.00 to 8.50
Eastern Pa.	9.50
New York	5.25 to 5.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	7.50 to 8.00
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	8.00 to 8.50
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.50 to 11.00

melting steel is off 25 cents to $5.25 bid for central Massachusetts delivery, while bundled skeleton is easy at $4. No. 1 textile in small lots has sold at $6.75, delivered in New England, while bids of $3.40, f.o.b., are offered for heavy melting and cast. Movement of cast scrap to outside points is light, although 1000 tons of cast mixed and stove plate was barged from a Maine port to the Delaware river district.

New York—Except for a little buying for water shipment, scrap is inactive, some consumers being out of the market. One dealer is paying $2.50 for blast furnace borings for

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
Nc. 1 mach. cast (net)	9.00
Malleable (net)	7.00

shipment to Buffalo, but this is far above the general market. Mixed cupola cast is being bought at $5.50 for barge shipment while No. 1 steel brings $4.50, barge loading, for Japan. Little scrap is being moved by rail and prices on most grades are nominal. About 3000 tons of scrap will be released by the wrecking of the recently fire-damaged Cunard pier, contract for the wrecking having been let.

Philadelphia—Steel and iron scrap has softened under continued dullness and a number of grades are quoted lower. Buying is at a standstill.

Buffalo—Dealers continue to mark down nominal scrap prices, but are more hopeful than for several months because of the appearance of some guarded inquiries. Some of the principal dealers here believe a turn actually has come. Sales of the past week were confined to turnings and borings for nearby delivery. Buffalo & Erie railroad property will be sold Sept. 22, including 100 miles of track and other equipment. Sale will be in the town of Brant.

Pittsburgh—In spite of the absence of an expected large mill purchase, scrap prices have shown an easier tendency due to dealers' lower purchasing prices. Especially is this true on No. 1 heavy melting steel, now quotable at a $1 a ton spread of $9 to $10. Hydraulic compressed sheets and blast furnace borings and turnings are easier. A mill purchase of machine shop turnings at $6 has been recorded. Sale of other grades is as quiet as formerly and prices to a large extent are nominal.

Cleveland—Resumption of two open-hearth furnaces by the Otis steelworks last week has raised hopes of need for additional heavy steel scrap supplies by the end of this month. Some business done locally on iron car wheels has brought out the range of $7.50 to $8, Cleveland.

Detroit—Iron and steel scrap prices continue unchanged on the basis of compressed sheets and heavy melting steel at $5 to $5.50, borings and turnings $3.25 to $3.75 and heavy auto cast $9 to $9.50. The feeling is growing that the market here is on the bottom and that there will be no change for the next two or three weeks. Medium and high-price car manufacturers are offering less scrap; low-price manufacturers, whose operations are gaining, have less to offer because the largest factor is consuming his own scrap.

St. Louis—Almost complete inertia has descended on the market for iron and steel scrap. There is increasing difficulty in obtaining bank credit for carrying scrap and mainly for this reason virtually nothing is being purchased for storage. Operations at yards have practically ceased.

Cincinnati—Louisville & Nashville railroad rejected bids on 19,000 tons of scrap during the past week, the first list it has issued since January. Bids on other recent railroad scrap were reported lower than previously. The price trend is downward, revisions awaiting sales.

Birmingham, Ala.—Buying of steel and iron scrap is only for spot needs and in small lots. Railroads are holding back tonnage because of low prices.

Toronto, Ont.—General stagnation has swept over the iron and steel scrap markets. Sales were negligible both in steel and iron grades, although a few sales were reported in the latter. Machinery cast is moving at a fairly steady rate.

Hit Direct Scrap Trading

Chicago—Certain railroads are putting pressure on consumers to bid on their scrap offerings, it was brought out at a recent meeting of the Chicago chapter of the Institute of Scrap Iron and Steel Inc., of which William Ross is president. Dealers are discouraging direct sales and so are mills, it was said.

A proposal has been made by directors of the New York chapter of the Institute of Scrap Iron and Steel Inc. that scrap yards in the Metropolitan district be closed for one month. Lack of market for scrap and restricted banking policies are the cause of the proposal.

Coke

By-Product Foundry Grade Reduced 50 Cents in Chicago District—Market Is Quiet

COKE PRICES, PAGE 52

Pittsburgh—Although Connellsville furnace coke may be quoted at $2.15 to $2.25, there is some $2 business in the market. Curtailed operations of blast furnaces account for present poor demand. Continued spottiness in the melt by this district's foundries results in a lack of improvement in foundry coke, which likewise is nominal at $3 to $4.25.

Birmingham, Ala.—Demand continues slow, and not more than 500 of the 1390 by-product coke ovens are in full operation. The foundry grade continues $4.50, ovens.

New York—With the local foundry melt between 15 and 20 per cent, demand for metallurgical coke continues slack. Beehive furnace coke is unchanged at $2 to $2.50, Connellsville; and by-product foundry coke at $3 to $3.25, Connellsville, for standard brands, and $4 to $4.50, Latrobe, Pa., for premium quality. By-product coke prices are unchanged at $8.21 to $8.81, delivered Newark, N. J.; $10, New England; and $8.50, Philadelphia.

Cincinnati—Orders for by-product foundry coke show no improvement. Dealers here report quotations at Milwaukee and Chicago off 50 cents.

Chicago—By-product foundry coke has been reduced 50 cents a ton to $7, Chicago ovens. This is the first change in the coke price here since May, 1931.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.75c, Conn., for copper

Sheets

Yellow brass (high)	12.00
Copper, hot rolled	15.12½
Lead sheets, cut, to jobbers	6.50
Zinc sheet (100-lb. base)	9 00

Tubes and Pipes

Seamless yellow brass (high)	15.25
Seamless copper	14.37½

Rods

Yellow brass (high, full turnings)	9.75
Naval brass	10.87½

Anodes

Copper untrimmed	11.75

Wire

Yellow brass (high)	12.00

Old Metals

Dealers' buying prices, cents lb. No. 1 Composition Red Brass

New York	2.75 to 3.00
Chicago	2.00 to 2.25
Cleveland	2.25 to 2.75
St. Louis	2.75

Heavy Yellow Brass

New York	1.75 to 2.00

Heavy Copper and Wire

New York	3.75 to 4.00
Chicago	2.62½ to 2.87½
Cleveland	2.50 to 3.00
St. Louis	3.00

Composition Brass Borings

New York	2.50 to 2.75

Yellow Brass Tubing

Cleveland	1.25 to 1.75

Light Copper

New York	3.00 to 3.25
Chicago	2.12½ to 2.37½
Cleveland	2.25 to 2.50
St. Louis	2.75

Light Brass

Chicago	1.25 to 1.37½
Cleveland	1.00 to 1.25
St. Louis	1.50

Lead

St. Louis	2.00

Zinc

New York	1.00
Cleveland	0.75 to 0.87½
St. Louis	1.00

Aluminum

Clippings, new, soft, Cleve.	9.50 to 10.00
Clippings, hard, Cleveland	7.00 to 7.50
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	3.25 to 3.75
Mixed cast, St. Louis	3.00 to 3.50

Secondary Metals

Remelt, aluminum No. 12	8.00 to 9.00
Brass ingots, 85-5-5-5	6.00

Metals

Demand Still Dull Although Copper and Zinc Decline To New Lows—Lead Holds Steady

New York—Demand for all metals was light last week despite more attractive prices on copper and zinc. Lead continued comparatively most active. Tin was stronger but still dull. Aluminum and nickel remained steady. Antimony was easy.

Copper—Electrolytic copper was offered for delivery in the domestic market by custom smelters at the new record low price of 5.37½c, Connecticut, in sufficient quantity to more than satisfy current restricted demand. Mine producers held nominally to 6.00c but recognized lower prices as evidenced by the cut of ½-cent in copper and brass products. Copper for foreign delivery brought 5.62½c, c.i.f. European ports.

Zinc—Selling pressure by a few interests forced the price of prime western metal to the new low of 2.30c, East St. Louis. After midweek, however, a firmer tone developed due to increased inquiries and the report that Tri-State ore producers are contemplating a shutdown for a period of two or three months. High-grade zinc commanded 15 to 20 points more than the usual differential of 1 cent over prime western.

Lead—Steadiness continued in the lead market with sales comparatively better than for other leading metals. Refined metal stocks showed only a small increase last month. This aided the steady price tone. May requirements now are reported to be 90 per cent covered while more than half the purchasing for June needs has been done.

Tin—Prices showed strength after the middle of the week, reflecting the firmer situation in the London market. Domestic consumers still withheld purchases, however. The International tin committee was reported to have changed its restriction plan. The new plan calls for a ban on exports during June and July by chief tin producing countries and a reduction of output to 33.25 per cent of capacity during June.

Antimony—Sales were light and the price trend was downward.

Naphthalene Demand Better; Benzol Steady

New York — Naphthalene shipments are heavier, this being the busy period for distributors. Prices are steady and unchanged. Distillates have slowed up, although lighter demand comes with a slight decline in production. Benzol is steadier than several weeks ago, the firmest of the group being toluol. Little material is available for immediate shipment. Phenol is unchanged in price with a routine demand.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.178

Per Pound at Producers' Plants in

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

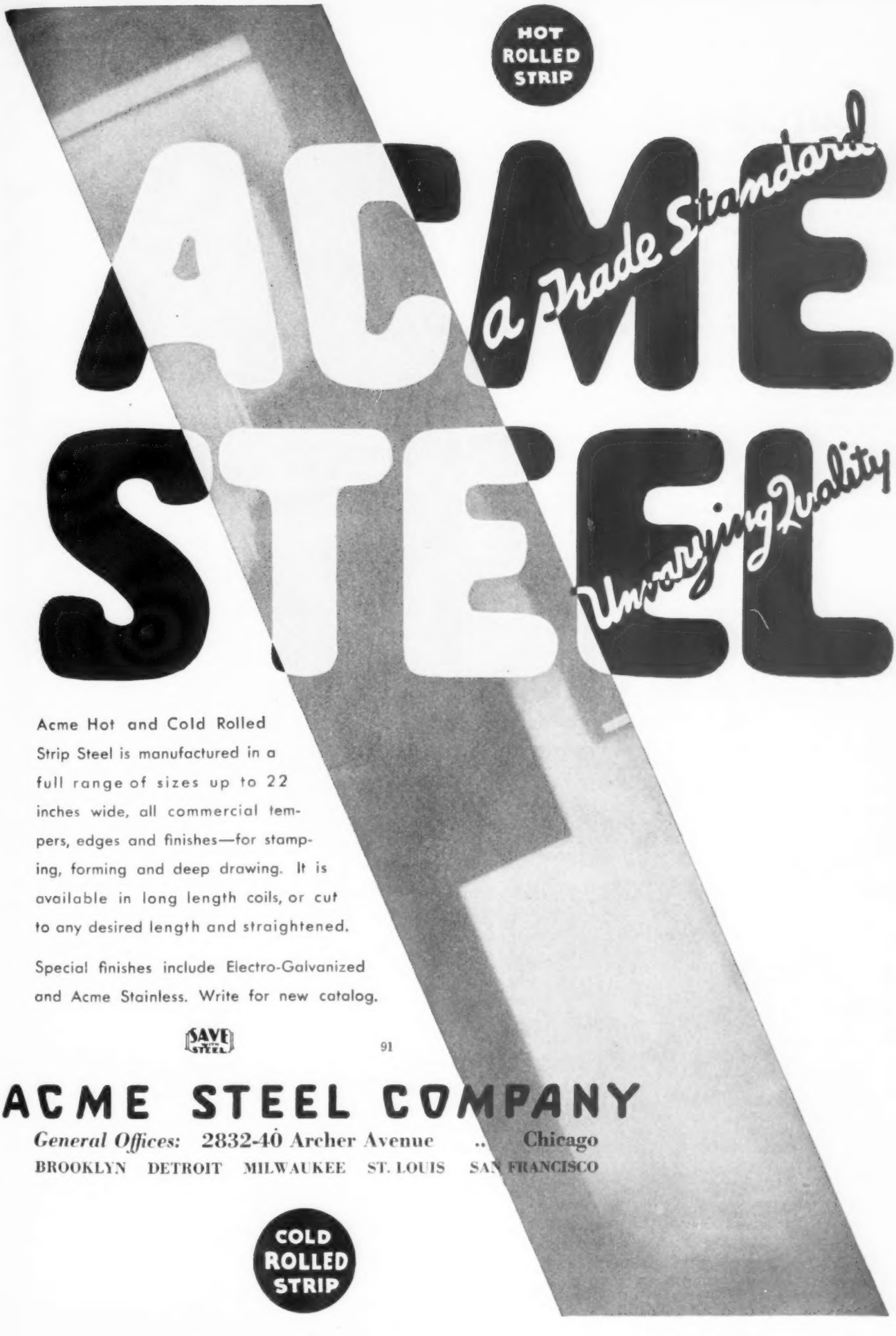
Sulphate of ammonia	$1.10 to 1.20

Quicksilver Is Easier

New York—Quicksilver prices are lower here than a week ago, while demand remains generally quiet and restricted to a few small lots. Quicksilver is $67 to $68, a virgin flask of 76 pounds of small lots. It is reported that round lots would command about $65 to $66 a flask, depending on quantity.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
May 14	5.50	6.12½	5.25	20.40	20.80	3.00	2.90	2.35	22.90	5.20	35.00
May 16	5.50	6.12½	5.25	20.50	20.90	3.00	2.90	2.30	22.90	5.25	35.00
May 17	5.37½	6.12½	5.12½	20.35	20.75	3.00	2.90	2.30	22.90	5.20	35.00
May 18	5.37½	6.12½	5.12½	20.87½	21.30	3.00	2.90	2.32½	22.90	5.12½	35.00
May 19	5.37½	6.12½	5.12½	21.25	21.65	3.00	2.90	2.35	22.90	5.12½	35.00
May 20	5.37½	5.87½	5.12½	21.25	21.65	3.00	2.90	2.32½	22.90	5.12½	35.00


HOT ROLLED STRIP
ACME STEEL
a Trade Standard
Unvarying Quality
Acme Hot and Cold Rolled Strip Steel is manufactured in a full range of sizes up to 22 inches wide, all commercial tempers, edges and finishes—for stamping, forming and deep drawing. It is available in long length coils, or cut to any desired length and straightened.
Special finishes include Electro-Galvanized and Acme Stainless. Write for new catalog.
SAVE WITH STEEL
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ACME STEEL COMPANY
General Offices: 2832-40 Archer Avenue .. Chicago
BROOKLYN DETROIT MILWAUKEE ST. LOUIS SAN FRANCISCO
COLD ROLLED STRIP

Europe

Better Outlook Seen in British Pig Iron—Continental Steel Is Cheaper but Buying Is Light

London—(*By Radio*) — Although buying of pig iron continues light the outlook is somewhat brighter. Foreign inquiry shows some increase but domestic needs are quiet. Pig iron exports from Middlesbrough in April were 5023 tons. Sheetmakers and structural steel producers are more active. Continental steel continues to be offered at a lower price than domestic but buying is limited. Galvanized sheets and tin plate are dull.

Imports and exports of steel in April showed an increase over March. Imports were 144,535 tons in April, compared with 130,174 tons in March. Exports were 180,436 tons, compared with 166,431 tons in March.

From the Continent the report is that export business shows greater activity, with prices firm, except in semifinished steel. Germany has booked some substantial plate and sheet orders. All blast furnaces in Austria now are idle.

The 33 1/3 per cent duty on ferromanganese, spiegeleisen and some semifinished steel and rolling mill products is imposed for three months from April 26, pending research.

Pacific Coast

Small Lots Moving and Future Needs Are Coming Out

San Francisco—(*By Air Mail*)—Movement of steel products on the Pacific Coast remains quiet. Chicago Bridge & Iron Works booked 800 tons of plates for a gas holder for the Southern Counties Gas Co., San Diego, Calif. Important new inquiries include 1000 tons of cast iron pipe for Oakland, Calif. Prices are unchanged.

Mild steel bars are moving in small lots only and 2.00c, c.i.f., is general. Concrete bar awards exceeded 600 tons. Unnamed interests took 327 tons for highway work in Orange county, Calif. Among new inquiries are 120 tons for highway work in Contra Costa county, Calif., and 120 tons for a dock extension at Fort Mason, San Francisco. Out-of-stock prices in the San Francisco section hold at 2.60c, base on carload lots while Los Angeles quotations range around 2.10c.

Structural shape awards were exceptionally light and only one award involving 100 tons or more was reported. Unnamed interests took 100 tons for three bridges in Los Angeles county, Calif. Los Angeles county has opened bids on 368 tons for a bridge over the Los Angeles river and will open bids May 31 for 389 tons for a bridge over the Rio Honda river. Bids are being taken on 190 tons for the Hanchette apartments in San Francisco. Plain standard shapes hold at 2.00c, with wide flange material quoted at 2.10c.

No cast iron pipe awards of size were noted. Glendale will open bids May 26 for 349 tons of 24-inch Class C pipe.

Bridgework Gives Tonnage

Seattle—Structural awards totaling 1400 tons featured the Pacific Northwest iron and steel market this week. Three Seattle plants booked this business as follows: 800 tons for Stilliguamish river state bridge, 858 foot three truss span, Silvana, Wash., to Wallace Bridge & Structural Steel Co.; 450 tons, Skykomish river bridge, Snohomish county, Washington, to Hofius Steel & Equipment Co., 572 foot cantilever span, state project; 150 tons, suspension bridge Lewis river, Cowlitz county, Washington, to Isaacson Iron Works. The latter firm also has a small award for a Seattle store and office building. Bureau of reclamation, Denver, will open bids June 16 for furnishing a cylinder gate hoist and several gates and accessories for the Cle Elum dam project, Washington, involving about 325 tons of steel.

Washington this week let $375,000 in four highway projects. King county, Washington, will receive bids in June for an $85,000 steel bridge. Idaho called for bids May 17 for three road jobs involving two small concrete bridges.

Bremerton, Wash., has awarded the general contract for a water system calling for 200 tons of 2 to 8-inch cast iron pipe to be furnished by R. D. Wood & Co., Philadelphia. Centralia, Wash., has taken bids for 340 tons of 18 and 20-inch cast iron pipe. Vancouver, B. C., will award contracts May 27 for an unstated tonnage of welded steel pipe and specials.

Wholesale jobbing houses report no improvement, with the usual spring pickup absent. Sales are in small tonnages.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, May 19

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

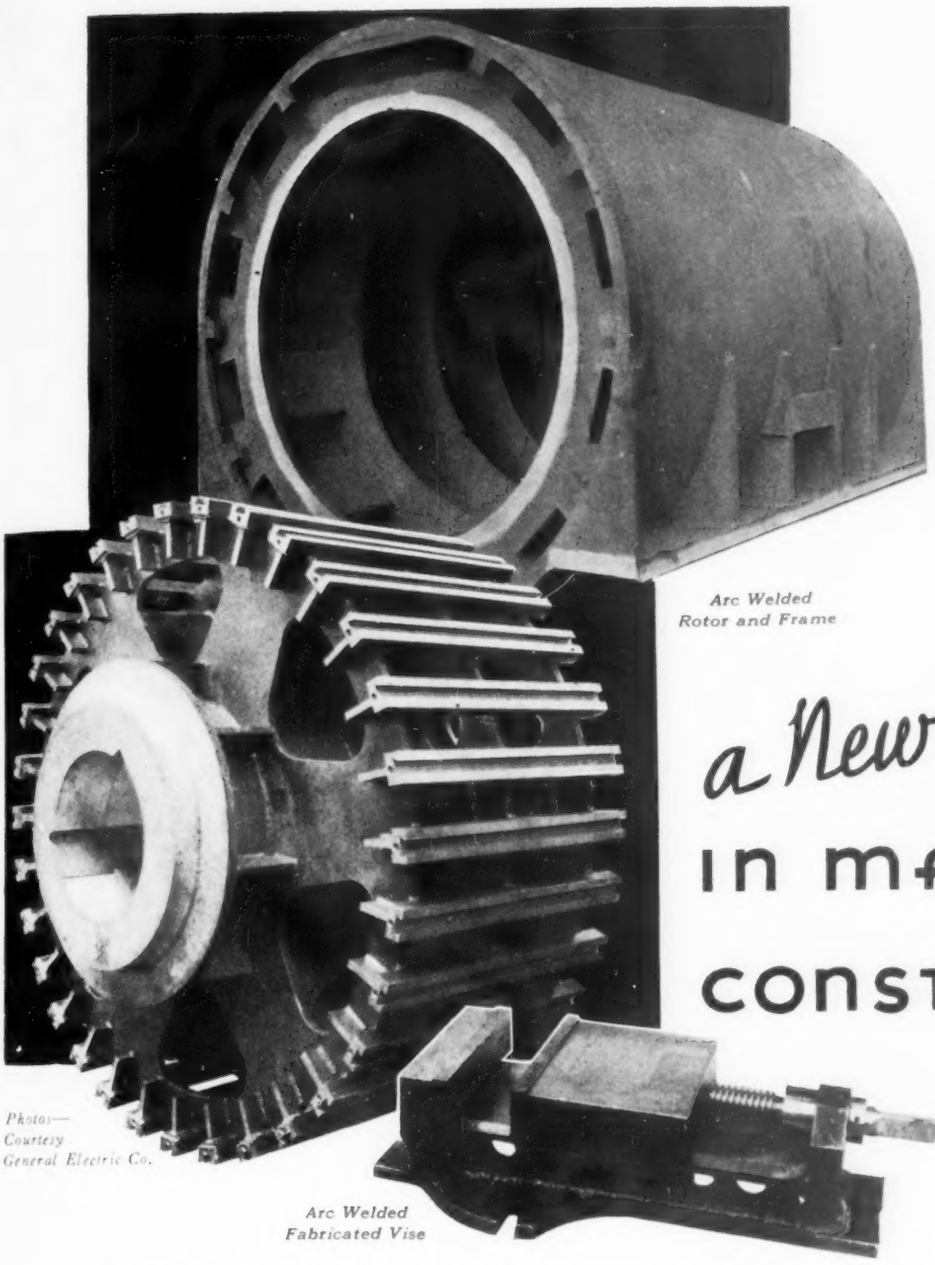
	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$10.76	2 18 6	$8.87	1 16 6
Basic bessemer	10.30	2 16 0*	9.23	1 18 0
Hematite, Phos. .03-.05	11.78	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$19.78	5 7 6	$9.84	2 0 6
Wire rods, No. 5 gage	27.60	7 10 0	21.87	4 10 0
FINISHED STEEL				
Standard rails	$30.36	8 5 0	$28.55	5 17 6
Merchant bars	1.05c	6 7 6	.48c to .50c	2 4 0 to 2 5 0
Structural shapes	1.21c	7 7 6	.46c to .47c	2 2 0 to 2 3 0
Plates, †¼ in. or 5 mm	1.44c	8 15 0	.59c to .61c	2 14 0 to 2 15 0
Sheets, black, 24 gage or 0.5 mm.	1.31c	8 0 0	1.20c to 1.21c	5 9 0 to 5 10 0
Sheets, gal., 24 gage, corr.	1.72c	10 10 0	1.51c	6 17 6
Bands and strips	1.35c	8 5 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.39c	8 10 0	1.18c	5 7 6
Galvanized wire, base	2.03c	12 7 6	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.80c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.76	0 15 0	$3.20	0 13 2

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.58	2 17 6	$ 9.09	230(2)	$ 9.13	325	$16.49	69
Basic bessemer pig iron	10.30	2 16 0*	7.90	200(1)	8.29	245	18.04	75.50
Furnace coke	2.44	0 13 3	4.90	124	4.50	160	5.11	21.40
Billets	19.78	5 7 6	14.62	370	10.82	385	23.78	99.50
Standard rails	1.44c	8 15 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.15c	7 0 0	.95c	530	.56c	430	1.24c	115
Structural shapes	1.44c	8 15 0	.99c	550	.55c	425	1.22c	112.50
Plates, †¼-in. or 5 mm	1.48c	9 0 0	1.17c	650	.70c	535	1.43c	132.50
Sheets, black	1.44c	8 15 0§	1.44c	800‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.54c	9 7 6	2.70c	1,500	1.95c	1,500	3.40c	370
Plain wire	1.39c	8 10 0	2.03c	1,130	1.95c	1,500	1.92c	178
Bands and strips	1.56c	9 10 0	.90c	500	.88c	675	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.



Arc Welded
Rotor and Frame

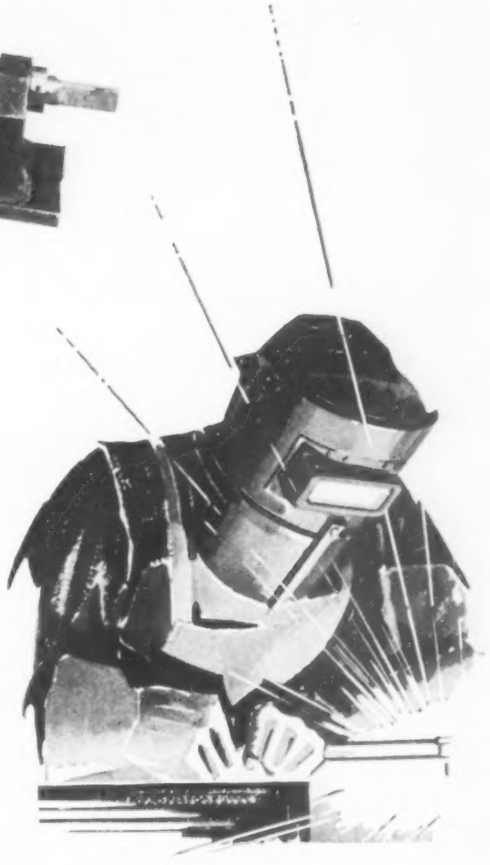
Photos—
Courtesy
General Electric Co.

Arc Welded
Fabricated Vise

a New Economy IN MACHINE CONSTRUCTION

PROFITS today must come from increased economy in production rather than from sales volume. Many manufacturers of machinery are finding a most satisfactory solution to this problem in the use of Rolled Steel. Not only is the desired economy effected but a vast improvement in their product is also achieved.

Important advantages of Rolled Steel include increased strength, decreased cost and weight, elimination of pattern expense and delay, reduction in overhead, lower material inventory, greater production in less floor space, little or no machining. These advantages are not confined to large construction but apply with equal satisfaction to smaller items. Carnegie engineers will gladly consult with you regarding the use of Rolled Steel in machine construction.



CARNEGIE STEEL COMPANY · PITTSBURGH

Subsidiary of United States Steel Corporation

176

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel		Iron	
In.	Blk.	Gal.	Blk.	Gal.
½	58	44½	25	7
¾	62	50½	30	13
1—3	64	52½	1—1¼ 33	17
			1½—2 37	20

LAP WELD

2	57	45½	2 25 11
2½—6	61	49½	2½—3½ 30 15
7—8	58	45½	4—6 32 19
9—10	56	43½	7—8 31 18
11—12	55	42½	9—12 28 13

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜ +11 +46
¾	60	49½	½ 25 9
1—1½	62	51½	¾ 30 14
2—3	63	52½	1—2 36 20

LAP WELD

Extra strong, plain ends

2	55	44½	2 31 15
2½—4	59	48½	2½—4 36 22
4½—6	58	47½	4½—6 35 21
7—8	54	41½	7—8 33 19
9—10	47	34½	9—12 23 10
11—12	46	33½	

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$32.00 to 33.00
Four-inch, Birmingham	36.00 to 37.00
Four-inch, Chicago	38.40 to 42.40
Six to 24-inch, Chicago	34.40 to 38.40
Six-inch and over, N. Y.	28.00 to 30.00
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	2.35c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	1.90c
Los Ang., lcl	2.20c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	2.35c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	2.35c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.50c
N. Y.	3.00c
Portland	3.75c
Phila.*† (e)	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.05c
New York	3.75c-4.00c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.25c
San Fran.	3.95c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	4.35c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.75c
San Fran.	4.35c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.25c
San Fran.	3.75c
Seattle	3.25c
St. Paul	3.20c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.75c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.17c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.50c
St. Louis	3.35c
Tulsa	4.65c

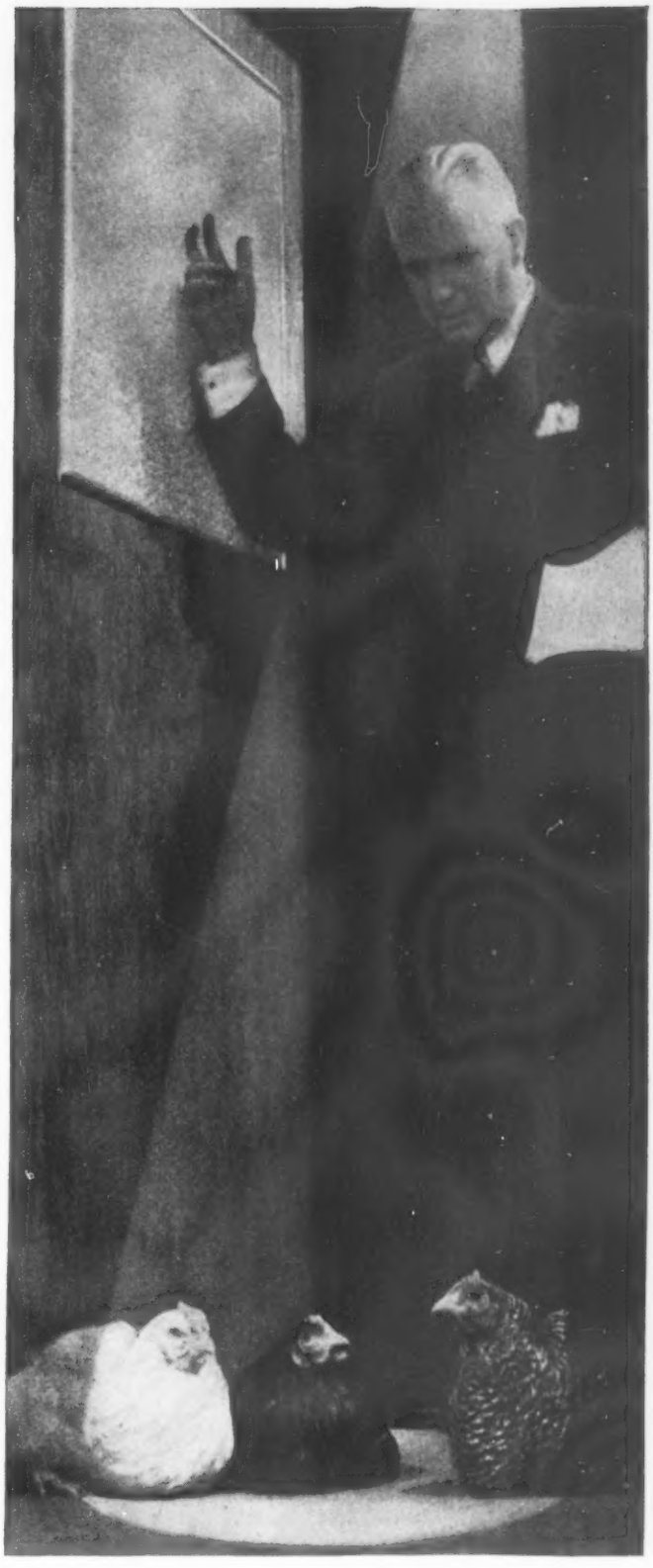
Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡ Domestic bars.
* Plus quan. extras.
** Less than 25 sheets.
*† 50 or more bundles.

KEEP THESE "CHICKENS" from roosting on YOUR DOORSTEP!



Pipe troubles . . . like chickens . . . usually "come home to roost". And when pipe fails after only a few short years of service—when pipe repairs pile up expenses—things get awkward for the man who must say, "I specified or selected that pipe."

Reading Puddled Iron Pipe does not put you "on the spot." It may cost a trifle more in the beginning, but it pays for itself many times over in freedom from repair and replacement. When you bury it in walls or ceilings, you know it is going to LAST. For behind every length of Reading Puddled Iron Pipe stands a record of resistance to rust, corrosion, vibration and electrolysis that no other pipe material can match!

When you want to be SURE of savings and satisfaction, don't be content with LESS than Reading Puddled Iron Pipe. No other kind of pipe can give you MORE!

READING IRON COMPANY, PHILADELPHIA, PA.

READING PIPE
PUDDLED IRON
Since 1836

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

TENNESSEE PLATES
IN DIFFICULT CONSTRUCTIONS

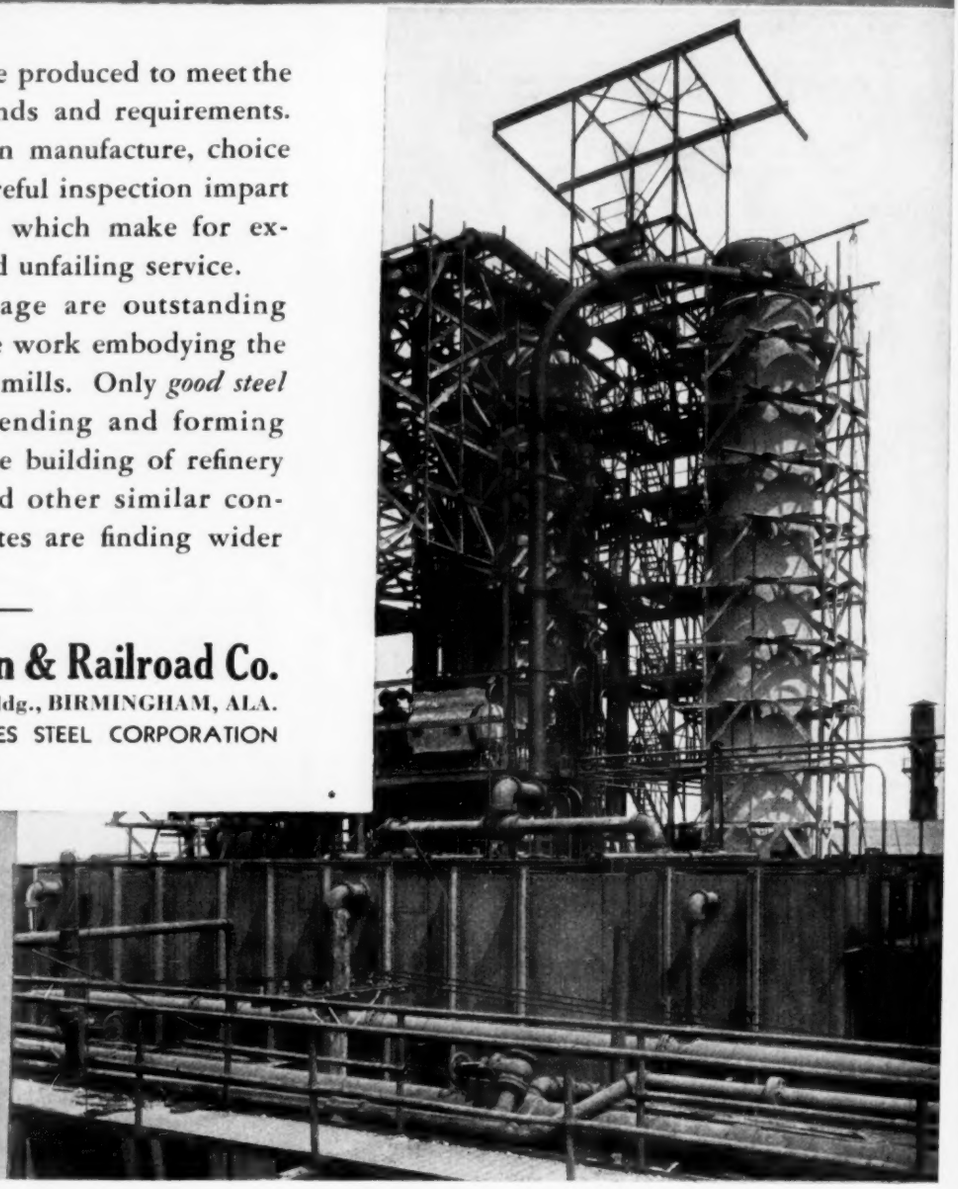
TENNESSEE Plates are produced to meet the most exacting demands and requirements. Utmost skill and care in manufacture, choice of raw materials and careful inspection impart to them those qualities which make for exceptional workability and unfailing service.

Illustrated on this page are outstanding examples of difficult plate work embodying the products of Tennessee's mills. Only *good steel* will stand the severe bending and forming operations incident to the building of refinery equipment. For this and other similar constructions, Tennessee Plates are finding wider and wider markets.

Tennessee Coal, Iron & Railroad Co.

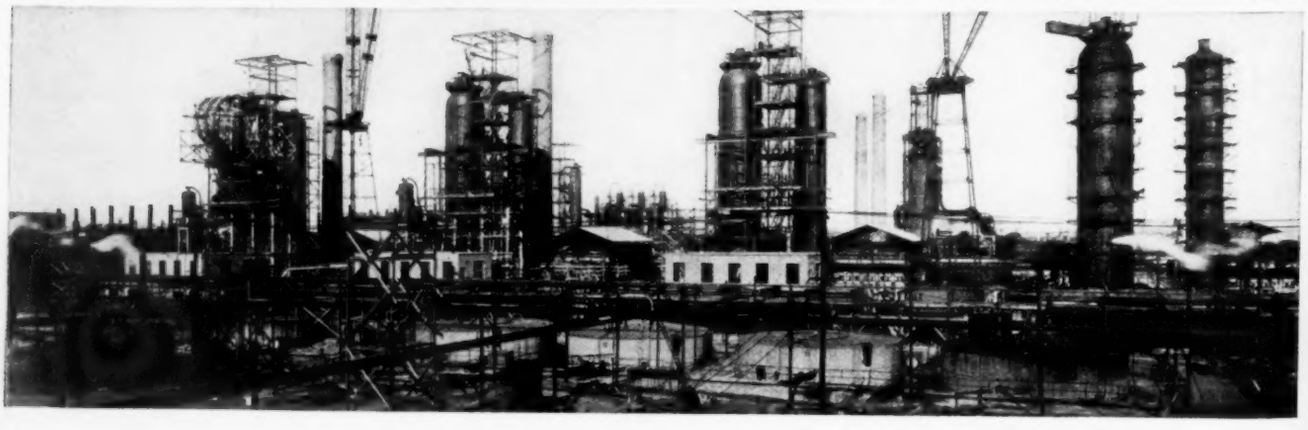
General Offices: Brown-Marx Bldg., BIRMINGHAM, ALA.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION



PRODUCTS
Bars and Small Shapes
Plates, Structural Shapes
Hoop and Band Steel, Cotton Ties

Sheets (Hot Rolled Annealed, Galvanized, Special Finishes)
Forgings, Castings
Rails and Accessories
Semi-finished Materials, Pig Iron



Machinery

GENERALLY curtailed operating schedules in most lines of industry act to the detriment of equipment sales, many of the leading buyers being out of the market. Navy department will close in two weeks on a list of 54 chain hoists. Other government purchases have had strengthening effect in various market centers. Steel mills are showing no interest in closing on pending work. Textile machinery field is quiet and prospects for increased demand from railroads and farm machinery builders in the near future are poor. Crane awards continue in low volume, adversely affecting builders of control devices.

New York—Lack of active inquiry indicates little improvement in the demand for machinery and equipment during the next few weeks. Some of the usual best sources are out of the market while general industry, operating on curtailed schedules, does not feel the immediate need of new equipment at this time, although it is admitted that potential business is large. This, however, is not likely to become active until the need is felt in production schedules.

Meanwhile, most builders in the East are keeping skeleton organizations in plants on the meager miscellaneous volume being taken. But a few builders are operating near normal schedules.

Bids close June 7 on 54 chain hoists for the navy department as follows: Eight 1-ton and twelve ½-ton, Brooklyn; five 1-ton and nine ½-ton, Puget Sound; and ten 1-ton and ten ¼-ton, Mare Island.

Worcester—Inquiry for machine tool equipment is light and sales are largely confined to one or two tools at a time. Forced sales of plant equipment in the Providence district are placing considerable used metalworking equipment on the market. Dullness also prevails in the textile machinery field, one of the largest loom-makers operating on a greatly curtailed schedule. The Springfield refrigerator plant is fairly active, but is not now in the field for new equipment, having purchased some time back. Some government work is coming out and builders in this district are bidding in greater numbers for this work. The boring mill builder in this district is doing little. Waterbury Tool Co. booked an order for three hydraulic pumps for Portsmouth, N. H., while the French Oil Mill Machinery Co., Piqua, O., was low on a forcing press for the Boston navy yard.

Pittsburgh — Machinery inquiries and orders both failing to improve over the past week leave the market unchanged. Local steel interests are not adding to their pending lists for equipment, nor are they on the other hand showing any disposition to close on outstanding work. Aside from the heavy equipment market there has been likewise little, if any, activity in small tools. Apparently no early disposition is planned for the proposed order for Pennsylvania railroad shops at Altoona, Pa., which were destroyed by fire some time ago.

Cleveland—Machinery and equipment sales exhibit no tendency toward overcoming the prevailing lassitude which grips them. Automotive business has failed to materialize to any appreciable degree. A manufacturer of control equipment for cranes reports poor business as a result of lagging crane buying. Scattered sales of single units and replacement parts contribute a little toward meeting selling overhead. A machinery salesman in this territory is credited with the cryptic statement that the margin between good business and bad business is not as great as is imagined—which might be interpreted as an encouraging observation.

Chicago—May to date has brought but slight change in sales of machine tools and equipment from the poor activity of April which for some interests was the dullest month in history. Prospects for increased demand from railroads and farm machinery builders in the near future are drab, current inquiry being scant. Total volume of inquiry is light. Occasional sales of resale equipment are noted, one large punch press having been purchased from a plant in this district.

Sheet Sales Up in April; Production Reduced

Sheet sales for April, averaging 3434 net tons daily, increased 4.8 per cent over the March average, according to the National Association of Flat Rolled Steel Manufacturers, Cleveland. Daily production, 3385 tons, was down 5 per cent; and shipments, 3488 tons, off 8 per cent. Totals for April follow: Sales, 103,011 tons; production, 101,559 tons; shipments, 104,637 tons.

Unfilled tonnage May I was 99,510 tons, compared with 102,171 April I. Total sheet capacity in the United States for April was approximately 555,000 tons, and the capacity on which the association's figures are based was 381,550 tons.

Warehouses X-Ray Their Position

(*Concluded from Page* 18)

tity extras be operative on plates and structurals as apply on bars.

Outlining the success of the new cutting extra list, now used by jobbers in the midwest with the exception of a few cities, Ralph J. Stayman, Jones & Laughlin Steel Corp., stated the cutting charge committee devoted two years to the compilation of the list and results thus far attained warranted the exhaustive efforts. Cutting charges, Mr. Stayman said, were a question of warehouse service and a fundamental problem in the steel warehouse business.

Mills sell steel as steel as a rule, but the jobber sells service in addition, although mills are catching up with the service feature of steel distribution, and the service spread between mill and warehouse is not as great as formerly, Mr. Stayman claimed.

S. L. Orr, of the Orr Iron Co., Evansville, Ind., presented a report of the legislative committee urging greater interest in legislation affecting industry, citing the Hawley bill, which proposes to adjust tariff duties in accordance with depreciation in foreign currencies.

Other officers elected, in addition to Mr. Bible as president, were: First vice president, C. C. Dodge, George F. Blake Inc., Worcester, Mass.; second vice president, H. B. Ressler, Joseph T. Ryerson & Son Inc., Chicago; new members of the executive committee, Ralph J. Stayman, Jones & Laughlin Steel Corp., Pittsburgh, and M. W. Faitoute, Faitoute Iron & Steel Co., Newark, N. J.

Building permits issued in 568 cities and towns in April totaled $52,079,621, an increase of 19.7 per cent over March, whereas normally there is a decline of 3.3 per cent, states S. W. Straus & Co., New York.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New York

BROOKLYN—Kurtz Iron Works has been incorporated with 100 shares no par value to operate a drop forging business, by Exco Lawyers Albany Service, 116 Nassau street, New York.

NEW YORK—Marvel Appliances has been incorporated with 100 shares no par value to manufacture machinery, by Kramer & Kleinfeld, 122 East Forty-second street.

NEW YORK—Brody Mfg. Co. has been incorporated with 100 shares no par value to manufacture metal furniture, by J. W. Friedman, 401 Broadway.

NEW YORK—Advance Pressure Castings has been incorporated with $50,000 preferred stock and 100 shares no par value to manufacture tools and dies, by H. Goldman, 120 Broadway.

New Jersey

ASBURY PARK — Independent Steel Construction Corp. has been incorporated with 300 shares common stock, by Tumen & Tumen, Asbury Park, N. J.

PLAINFIELD—Plainfield Iron & Metal Co. has been incorporated with 100 shares no par value to conduct an iron and metal business, by Edward Sachar, 148 East Front street, Plainfield.

Pennsylvania

PHILADELPHIA — Art Iron & Metal Inc. has been incorporated with $5000 capital to fabricate structural and ornamental iron and steel and other metals, by Harry A. Whartenby, 325 East Hortter street, and associates.

Michigan

DETROIT—Handy Heater Co. has been incorporated with 5000 shares no par value to manufacture electrical heaters, humidifiers and specialties, by William F. Klemm, 16233 Steel avenue.

Illinois

CHICAGO—Fuller Road Machinery Co., 844 Rush street, has been incorporated with 200 shares no par value to manufacture construction machinery, by Charles C. Fuller, 521 Brompton place, Chicago.

KANKAKEE—Noel Mfg. Co., 602 West Station street, has been incorporated with $1000 capital to manufacture and deal in electric appliances, by Cecil F. Sherwood, Leemarrs & Diamond, 310 City Bank building, are correspondents.

OAK PARK—Hayden David Engine Co., 538 Euclid avenue, has been incorporated with 12,000 shares no par value to manufacture steam engines and equipment, by Leslie W. Beebe. Beach & Beach, 111 West Washington street, Chicago, are correspondents.

SCALES MOUND—Mounds Utilities Corp. has been incorporated with 1000 shares no par value to manufacture electrical appliances, by C. L. Walton. Elwyn R. Shaw, 113 West Stephenson street, Freeport, Ill., is correspondent.

Missouri

ST. LOUIS—City Foundry Co., F. W. Priep president, gray iron castings, is rebuilding its burned plant, comprising 12,000 square feet of floor. Patterns, shafting and other equipment will be replaced later.

ST. LOUIS—Laclede Gas Light Co. is constructing a gas mixing building to cost $75,000 with equipment.

WEBSTER GROVES — St. Louis County Gas Co. will invest $100,000 in machinery and equipment to allow supply of mixed gas, including a 1-story steel building.

Texas

HOUSTON — Simplex Mfg. Co., Post-Dispatch building, H. H. Ford president and general manager, will start construction soon of a plant to manufacture cotton-picking machinery, to cost about $500,000.

Wisconsin

LA CROSSE—J. T. Hurd, city engineer, is preparing plans for a $35,000 municipal garage and machine shop.

MILWAUKEE — Royal Drapery Hardware Co., 500 North Water street, has been formed to manufacture ornamental metal products. Lazarus Altfeld is president.

MILWAUKEE — G. R. Worth-Harmes Gear & Machine Works Inc. has been incorporated to manufacture machine tools, machinery and parts. Ernest E. Harmes, 3454 North Newhall street.

Idaho

BOISE—State prison officials plan installation of a plant to manufacture automobile license plates and plate enamel ware.

Dominion of Canada

VANCOUVER, B. C. — Greater Vancouver water board, E. A. Cleveland chairman, W. H. Powell engineer, Berkins building, Vancouver, is receiving bids until May 27 for construction of pressure tunnel under First Narrows. Will include three large gate valves, two 48-inch cast steel and one 36-inch cast steel or iron; 16 cast steel pipes and bends, about 75 tons; two cast steel shaft caps with four outlets; 8 cast steel blind flanges 48 inches diameter; bolts, nuts, studs, 65 tons. Shop test of 660 pounds per square inch required.

COPPER CLIFF, ONT.—Canadian Industries Ltd., 1050 Beaver Hall hill, Montreal, Que., plans a plant here, costing $500,000, for manufacture of sodium and aluminum sulphate.

HAMILTON, ONT. — Dominion Glass Co., Chapple street, plans an addition to its plant here.

ST. CATHARINES, ONT.—Bingham & Taylor Ltd. has been incorporated with 40,000 shares no par value to operate a foundry and machine shop, by Robert B. Law, Welland, Ont.

TORONTO, ONT.—Clarke Bros. Machinists Ltd. has been incorporated with 4000 no par shares to operate an iron foundry, by Donald H. Hamilton, Toronto.

New Trade Publications

HERRINGBONE REDUCTION GEARS—Murray Iron Works Co., Burlington, Iowa, in Bulletin No. T-111 describes and gives specifications for its high-speed reduction gears.

ROLLER CHAINS — Catalog No. 525 by the Jeffrey Mfg. Co., Columbus, O., covers its steel thimble roller chain, with ample illustrations and data tables.

ELECTRICAL EQUIPMENT—Jefferson Electric Co., Bellwood, Ill., a suburb of Chicago, is distributing a folder photographically illustrating its new plant, in which the executive, engineering and manufacturing departments, formerly in separate plants, are combined.

REAGENTS — G. Frederick Smith Chemical Co., 867 McKinley avenue, Columbus, O., has prepared for distribution two publications on chemical reagents used in analytical chemistry. One publication treats of periodic acid and its salts and the other to ceric sulfate. Both are of use in the laboratories of steel plants for numerous determinations.

OPTICAL PYROMETERS—Bacharach Industrial Instrument Co., 7000 Bennett street, Pittsburgh, in its Bulletin No. 296 presents claims for its optical pyrometer of the Holborn-Kurlbaum type. It treats of the measurement of temperatures and the optical pyrometer method, giving description of the company's type of pyrometer. A table of industrial applications is given.